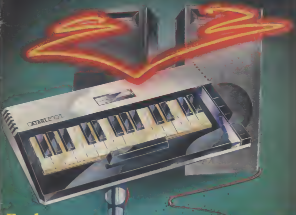
A Database Publication

ATARI USER

Vol. 1 No. 12 April 1986 £1

Inside this issue

Atari ST User



Explore the Atari's hidden sounds

Secrets of Modes 12 and 13 revealed

Unique disc catalogue printout utility

Can YOU beat a thinking Atari?

THE CHART TOPPING FLIGHT SIMULATION NOW ON ATARI

ALSO AVAILABLE ON 48K SPECTRUM • COMMODORE • AMSTRAD

FIGHTER PILOT

FREE COLOUR POSTER AVAILABLE WITH DISK VERSION

BY D.K. MARSHALL
ADAPTED BY MIK SEW

ATARI

400/800/600 XL
800 XL/130 XE
WITH AT LEAST 48K.

A SPECTACULAR FLIGHT SIMULATION OF THE WORLDS MOST EXCITING JET FIGHTER WITH STUNNING 3D COCKPIT VIEW AND DEADLY 3D AIR TO AIR COMBAT

The SUPREME SIMULATION
it leaves the rest at the runway threshold!

SPECTRUM VERSION VOTED
Simulation of the year – 1984
by **CRASH MICRO READERS**

ATARI
Fighter Pilot Disk ☐ £12.95
Fighter Pilot ☐ £9.95
SPECTRUM
Tomahawk 48K ☐ £9.95
Night Gunner 48K ☐ £6.95
Fighter Pilot 48K ☐ £7.95
COMMODORE 64
Speed King Disk ☐ £12.95
Speed King Cassette ☐ £9.95
Fighter Pilot Disk ☐ £14.95
Fighter Pilot Cassette ☐ £9.95
AMSTRAD CPC 464, 664, 6128
Fighter Pilot ☐ £9.95
Fighter Pilot Disk ☐ £13.95

Cheques payable to Digital Integration Ltd
I enclose a cheque/P.O. for ________ Total
Name ________
Address ________

Please debit my Access/Visa card no
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Expiry date ________

Tele Sales (0276) 684959

Postage & pack free within UK. (Overseas add 55p per cassette)

Please send to
DIGITAL INTEGRATION
Watchmoor Trade Centre
Watchmoor Road
Camberley Surrey
GU15 3AJ

AT4

Trade and Export enquiries welcome. Lifetime Guarantee.

MICRO WORLD
MICROWORLD
Computer Group

LONDON

140 Battersea Park Road
London
01 627 4840

BIRMINGHAM

39 Waterloo Street
Birmingham
021 236 7772

GLASGOW

11 Bath Street
Glasgow
041 332 1116

Anderston Cross Centre
Glasgow
041 226 3011

EDINBURGH

4 Saint Andrew Square
Edinburgh
031-557 4196

12 Leven Street
Edinburgh
031 228 1111

ABERDEEN

77 Holburn Street
Aberdeen
0224 571735

How to Order

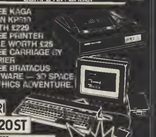
[illegible]

★ A UNIQUE OFFER FROM ★

MICROWORLD

COMPUTER GROUP

- ★FREE KAGA TAXAN KP810 WORTH £229
- ★FREE PRINTER CABLE WORTH £25
- ★FREE CARRIAGE BY COURIER
- ★FREE BRATACUS SOFTWARE — 3D SPACE GRAPHICS ADVENTURE



ATARI

520ST

FEATURES

[illegible]

SPECIAL SYSTEM OFFER
worth £1,144
now only
£749

NEW ATARI 1040ST SYSTEM

FEATURES

1. 1 Megabyte Drive
2. 1 Megabyte RAM
3. 1 Kaga Taxan Printer
4. 1 Printer Cable

with Mono Monitor £899.00 with Colour Monitor £1,099.00 inc VAT

MAIL ORDER

To Microworld Distribution Dept ATU Park House 140 Battersea Park Road London SW11
01 627 4840

Please send me ____________________

☐ I enclose a cheque for £ ______ payable to Microworld Computer Systems Ltd

☐ Please debit my Access/Visa/American Express Account

No ____________________ Signed ____________________

Name ____________________ Address ____________________

Vol 1 No 12 April 1986

Managing Editor **Derek Meakin**
Features Editor **Cliff McKnight**
Technical Editor **Andre Willey**
Reviews Editor **Christopher Payne**
Production Editor **Peter Glover**
Design Editor **Heather Sheldrick**
News Editor **Mike Cowley**
Advertisement Manager **John Riding**
Advertising Sales **John Snowden**
Editor in Chief **Peter Brameld**

Editorial 061 456 8835
Administration 061 456 8383
Advertising 061 456 8500
Subscriptions 061-480 0173
Telecom Gold 72 MAG001
Telex 265871 MONREF G
Quoting Ref 72 MAG001
Prestel Mailbox 614568383

Published by
Database Publications Ltd,
Europa House, 68 Chester Road,
Hazel Grove, Stockport SK7 5NY

Subscription rates for
12 issues, post free
£12 – UK
£15 Europe
£30 Overseas (Airmail)

Atari User welcomes program listings and articles for publication. Material should be typed or computer printed and preferably double spaced. Program listings should be accompanied by cassette tape or disc. Please enclose a stamped self addressed envelope otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Database Publications Ltd will be on an all rights basis.

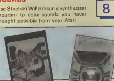
© 1986 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken the publishers cannot be held legally responsible for any errors in articles, listings or advertisements.

"Atari User" and "Atari ST User" are independent publications and Atari Corp (UK) Ltd are not responsible for any of the articles they contain or for any of the opinions expressed.

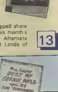
News trade distribution:
Europress Sales and Distribution Limited, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR
Tel. 0424 430422

News **7**
All the latest developments in the expanding world of Atari computing

Sounds **8**
Use Stephen Williamson's synthesiser program to coax sounds you never thought possible from your Atari

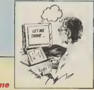


Software **13**
Mike Rowe and Bob Chappell share the work to bring you this month's reviews – Spellbreaker, Alternate Reality, Whirlinurds and Lands of Havoc



Adventuring **18**
Brillig checks out his acne rating with a look at Adrian Mole, plus hints and glitches

Contents


LET ME THINK ..

CDS Micro Systems
Working with the Atari ST

Atari ST User

Compiler 20
Part 2 of Frank O'Dwyer's series aimed at speeding up your Basic programs

Graphics 26
John White will help you make better use of Modes 12 and 13

Game 30
If you thought Mancune was something to do with a Northern town, take a look at this fascinating strategy game from David Reeves

Utility 34
Keep track of what's on all your discs with Douglas Ewan's utility program

Mailbag 37
Lots of letters from you, the readers Have you written recently?

Order Form 42
Take your choice of two special offers if you subscribe to *Atari User* this month.

You can save up to £8 off the exciting **Steve Davis Snooker** or £4 off the fact-packed **Working with the Atari ST.**

3 ST roundup
UK release of two new ST machines Unix on the ST and more

6 Advice
Andrew Bennett helps you to make the most of your ST This month there's more on using GEM plus hints and tips

9 Programming
Sol Guber gives an enthusiastic reception to TDI's Modula 2 a powerful language invented by the man who created Pascal

14 Music
Anthony Ginn goes looking for software to drive the ST's Midi ports

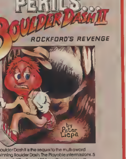
DEVIOUS DEEDS

SPY
VS
SPY
THE ISLAND CAPER

Real time animation, seven levels of difficulty full scrolling screens, Simulvision (TM) Simul play (TM)/2 players can play at the same time, shark attacks quick sand, punji stakes, snare pits fire bombs, napalm and sword fights etc make this your toughest challenge yet

Cassette £9.95 Diskette £14.95

UNDERGROUND PERILS...



Boulder Dash II is the sequel to the multi award winning Boulder Dash. The Playable intermissions. 5 levels of difficulty and 324 scrolling screens will challenge you as you transform butterflies into jewels discover the enchanted walls and outwit the growing amoeba.

Cassette £9 95 Diskette £14 95

FIRST STAR SOFTWARE INC

POWERFUL GRAPHICS

The Graphic Arts Department is the most powerful most versatile graphic design program available for the Atari home computer More than 30 commands to choose from. Hundreds of colours can be used in any one picture A three stage Zoom feature text in your pictures 40 brush patterns brush editor character editor circle draw mirror and a printer utility to printout your pictures are just a few of the many fine features to be found in the GAD

Diskette £29 95

3 GREATS FROM DATABYTE

ATARI

Available from all good computer software stores or post free from
Databyte 15 Wolsey Mews Kentish Town, London NW5
Telephone 01 482 1755

Spy Vs Spy II, The Island Caper, Boulder Dash, Rockford and Rockford's Revenge are TMs of First Star Software Inc. Spy Vs Spy is a TM of E.C. Publications Inc. © 1984, 1985 First Star Software Inc. Distributed by Databyte under licence from First Star Software Inc. Distribution arranged by International Computer Group. The Graphic Arts Department is a TM of Databyte © 1984, 1985 Databyte. All rights reserved. Atari is a TM of Atari Corporation.

Atari denies 8 bit customers ignored

ATARI has denied that it is treating 8 bit customers as poor relations. The criticism was levelled against Atari during a poll of 100 users drawn equally from the ranks of 800XL and 130XE owners

More than 80 felt the company had turned its back on the 8 bit machines in favour of the ST range.

Typical of the comments was: The arrival of the ST machines meant that Atari just doesn't want to know us any more. It is annoying when you think that although the ST may be the icing on the cake, we make up the cake itself.

When the dissatisfaction among 8 bit users was brought to the attention of Atari boss Max Bambridge he was quick to give assurances that the complaints were unfounded.

However he did admit the publicity that has surrounded the arrival of the ST machines has tended to put the less powerful models in the shade.

Sensitive

We are very sensitive to this" he told *Atari User*, for in no way do we want any of our customers to feel as though they are being treated any less fairly than others.

'The truth of the matter is that we are totally committed to the 8 bit market – just as we are to the 16 bit.

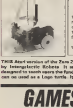
Max Bambridge points to the launching of a new low cost colour monitor for the 130XE as being an example of the company's on-going support.

It is our intention to see that the 130XE remains the leader in its own sector of the market , he said.

As part of this plan the Atari UK boss has pledged his support for companies wishing to develop projects for the 8 bit machines.

We are eager to help anyone in this area, whether it be with the loan of development machines, programming tools or just advice" he said.

That's how important the 8 bit market is to us.



THIS Atari version of the Zero 2 robot has been launched by Intergalactic Robots. It is an educational model designed to teach users the fundamentals of robotics and can be used as a Logo turtle. It costs £119.95

ST TOOLBOX

A COMMAND line processor has been released for the 520ST by Paperlogic.

Called the ST-Toolbox it is a productivity tool aimed at enhancing the machine's efficiency and performance.

It costs £29.95

Backing for Atari projects

HALF a million pounds is available for projects for the Atari range. The man with the money awaiting investment is Barry Krite, managing director of DataStar Systems.

"I am prepared to invest in likely looking products, existing ones that may need a boost or any which still may be at the idea stage", he says.

As a nation we are notoriously good at ideas but terrible at putting them into practise – often through lack of capital.

DataStar Systems manufacture the Magic Modem. It was this project with its heavy development costs which set Barry Krite thinking about investing in his own personal venture capital fund.

Flounder

Remembering the problems he had, he said: 'We realise how easy it could be even for an exceptional product to flounder if you did not have enough capital behind it.

Really there is no one out there you can turn to if you do not have money available.

'That is why I decided to make the offer not just for profit for myself, but to help the industry as a whole.

GAMES BOOM IS ON ITS WAY

THIS year will witness a massive increase in the amount of software available for the Atari 8 bit machines, the 800XL and 130XE.

An industry survey carried out by *Atari User* has revealed that the boom is already underway, with at least 100 new titles expected to come on to the market in the next few months.

More programs – and more outlets stocking them – should end the longstanding complaint by Atari 8 bit enthusiasts that software for their machines is often hard to find. There are two main reasons for the brighter outlook.

One is the deal with High Street giants Dixons and Currys which increased the 800XL user base by 100,000 at Christmas. The second release here of a host of 8 bit titles from the United States.

Software Express distribution director Ken Howells told *Atari User*: A lot of software companies have suddenly realised there is a big market for products for the Atari 8 bit range.

Firms that previously wouldn't have bothered to convert their titles for the Atari are now doing so in increasing numbers and programmers all over the country are being snowed under with conversion work.

American software houses are licensing large numbers of their Atari 8 bit programs to British firms. Some are even opening their own offices over here.

"We are in the process of introducing 50 new titles to this country, many originating in the USA, and I expect that total to be easily doubled by releases from other companies.

'Two or three new outlets a week are contacting us to order Atari programs. If any users have problems getting Atari 8 bit software these days they should change their retailer.

Distributor Microdeal reports that all its Atari 8 bit software is selling extremely well.

A spokeswoman said: 'We carry six titles at the moment. Perhaps we should be handling more – there's obviously a big demand for them.

Silica Shop is currently releasing 30 new products, many of them American imports for Atari 8 bit machines.

► Activate ► Atari's ► hidden ► depths ► of sound

STEPHEN WILLIAMSON invites you to turn up the music

INSPIRED by years of listening to the electronic sounds of rock groups like Tangerine Dream and Pink Floyd, I have written a synthesiser program that activates the hidden depths of the Atari sound chip.

It may not be up to the standard of Jean Michael Jarre, who uses electronic sound generating equipment costing many thousands of pounds, but the program is certainly fun to play with.

For best results connect your Atari directly to your stereo system via the monitor output and suitable leads. Alternately use a television with an earphone output and connect this to your amplifier. Turn the volume up.

Fortunately, you don't have to know a great deal about music or even computers to operate the program and produce a wide variety of sound ranging from the melodious to the cacophonic.

To control the program I have imitated Atari's big brother, the ST. Well I admit that the program is not quite as sophisticated as the ST, but the principle is the same. The joystick acts as a poor man's mouse. Each screen display presents a number of options. The joystick moves a cursor to the chosen option and a press of the fire button activates that option.

This user friendly approach is an ideal way for those unfamiliar with computers or the qwerty keyboard to operate the program. Inverse characters indicate that an option has been activated.

For example, go to the One Channel Sound page and you will find that the sound is pre-set to a 64kHz main base clock and pure sound. To switch on other sound attributes the cursor can be positioned anywhere on the line where the chosen option appears.

The program will not allow you to switch on incompatible options. For instance, if you switch on Distortion 2 any other distortion option previously turned on will automatically be cancelled.

When the desired combination of sound attributes has been chosen place the cursor over the Play box and press the fire button. Control then passes to the middle two rows of the keyboard.

The display at the bottom of the sound page shows how the musical notes have been allocated to the keys in a similar way to the piano keyboard with the sharps positioned above the natural notes

The musical scale is true for the preset sounds but other sound options may give various degrees of discord

To exit from the play mode press the Select key and a keyboard music key at the same time To return to the main menu go to the Return box

The ADSR section enables you to define a sound envelope If you are unfamiliar with the ADSR envelope study Figure I which shows a graph of the sound envelope

Attack is the time taken for a note to reach full volume and Decay the time taken to reach the Sustain Level Sustain is a measure of how long the note stays at the sustain volume level before the release when it fades to silence

When the cursor is over one of the ADSR labels at the bottom of the option menu and the fire button pressed the label will flash to prompt a keyboard input For Attack Decay Sustain and Release enter a value of between 1 and 265 If the number is less than three figures press the joystick button or the Return key to pass control of the program back to the joystick

The Sustain Level requires a value of between 1 and 14 and only needs the joystick button or Return key to be pressed if a single figure is entered

The program will not allow an invalid number to be entered in the ADSR envelope parameters To demonstrate the ADSR sound envelope enter Attack 2 Decay 10, Sustain 40 Release 50 with a Sustain Level of 9 to produce a crisp piano type sound

To obtain a woodwind type sound try Attack 20 Decay 30 Sustain 50 and Release 50 with a Sustain Level of 8

A snare drum type sound is made by setting the 64kHz clock (option 1) the 1 79 mHz clock (option 4) the Distortion 3 (option 8) and the 9 bit poly counter (option 9) followed by Attack 5 Decay 5 Sustain 5 Release 10 and Sustain Level 6

In order to understand what each of the program options does it is useful to know something about how the Atari sound chip functions (For a more detailed introduction to the subject see the May and June 1985 articles in *Atari User* by Pete Bibby)

In Basic there is just one command to control sound – called appropriately enough SOUND As well as accessing the sound system by means of this command it is possible to work directly on the sound registers which are found at addresses 53760 to 53766

53760 53762 53764 and 53766 control the pitch of sound channels 0 to 3 and addresses 53761 53763 53765 and 53767 affect the distortion and volume for each sound channel

For example a sound can be switched on using a command such as SOUND 0 90 10 10 or alternatively the same sound can be achieved by POKE 53760 90 followed by POKE 53761,234

In the program the play mode runs a machine code routine that detects which key has been pressed and allocates a pitch value which is stored in the sound channel 0 register at address 53760 and in the case of the two channel sound calculates a pitch value an octave less which is put in the sound channel 1 register at address 53762

This routine also handles the timing and volume controls during the ADSR section

Options 5 to 8 decide which distortion value is placed in the distortion and volume registers at address 53761 – if the two channel mode is chosen a similar distortion and volume value is placed in address 53763

Address 53768 is known as AUDCTL and affects the sound channels in ways that cannot be accessed directly from Basic Options 1 to 4 and option 9 change the value contained in this address to give various effects

Normally the Atari sound is generated using a 64kHz system The lower the frequency of the clocking the lower the note that results Therefore lowering the 64kHz clock to 15kHz by choosing option 2 changes AUDCTL to give notes of a lower pitch

The 1 79mHz clock (option 4) gives notes of a very high frequency

The high bandpass filter (option 3) filters out lower frequency sound to give a higher tone

During the distortion options (5 to 8) the distortion effect is achieved by something known as a poly counter which merges random waveforms with pure sounds

The value of the poly-counter affects the speed of these waveforms Normally the Atari is set to a 17 bit poly-counter

To see this in operation switch on distortion number 3 in the One Channel mode but without the 9 bit poly-counter Enter the Play mode and press Key L

Exit from the Play mode and switch on the 9 bit poly-counter Again press key L in the Play mode and you will notice how the change of poly counter speed affects the distorted sound

Of course when using pure sound the 9 bit poly-counter has no effect, and in other distortion and poly counter combinations the change may be difficult to detect

Option 10 Repeat is used only during the ADSR section and as the name implies causes notes to be repeated rapidly

The best way to use a program like this is to experiment and see what you can find among the Atari s vast range of sounds Have fun but spare a thought for your neighbours

Note The program will not run on a 16k machine

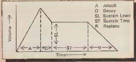
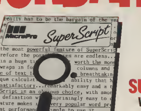


Figure I The ADSR envelope

```
10 REM *** SOUND SYNTHESISER ***
20 REM *** by Stephen Williamson ***
30 OPEN #1,4,0,"K:":POKE 16,112:GRAPH
ICS 0:? "Data loading ...":GOSUB 1600
40 GRAPHICS 0:SETCOLOR 2,12,0:CLR
50 GOSUB 1300
60 ? CHR$(125):POSITION 10,0:? "┌
───────────┐":POSITION 10,1:? "|SOUND
 SYNTHESISER|"
70 POSITION 10,3:? "by Stephen Williamson"
80 POSITION 10,2:? "└───────────
┘"
90 POSITION 10,8:? "1  ONE CHANNEL SOU
ND"
100 POSITION 10,10:? "2  TWO CHANNEL S
OUND"
110 POSITION 10,12 ? "3  A.D.S.R. SOUN
D"
120 GOSUB 270
130 Y1=Y
140 IF Y=8 OR Y=10 OR Y=12 THEN GOTO 1
60
150 GOTO 125
160 ? CHR$(125):POSITION 2,0:? "┌───
──────────────────┐":POSIT
ION 2,1 ? "|SOUND SYNTHESISER|"
170 POSITION 2,2 ? "└─────────
─────────┘"
180 IF Y=8 THEN POSITION 21,1 ? "ONE
 CHANNEL SOUND|":NCT=0
190 IF Y=10 THEN POSITION 21,1:? "TWO
 CHANNEL SOUND|":NCT 1
200 IF Y=12 THEN POSITION 21,1:? "ADSR
 ENVELOPE|":ADSR=1
210 X=0:Y=4
220 GOSUB 370
230 REM *** CONTROL LOOP ***
240 GOSUB 270
250 GOSUB 580
260 POKE 85,X:POKE 84,Y:GOTO 240
270 REM *** MOVE CURSOR ***
280 ST=STICK(0):FOR DELAY=1 TO 10:NEXT
 DELAY
290 X=X+(ST=7)-(ST=11):Y=Y+(ST=13)-(ST
=14)
300 IF STRIG(0)=0 THEN FOR DEL=1 TO 40
:NEXT DEL:RETURN
310 IF X<0 THEN X=39
320 IF Y<0 THEN Y=23
330 IF X>39 THEN X=0
340 IF Y>23 THEN Y=0
350 POKE 85,X:POKE 84,Y:? CHR$(160);
360 GOTO 270
370 REM *** PRINT MENU ***
380 POSITION 10,4 ? AU1$
390 POSITION 10,5:? AU3$
400 POSITION 10,5 ? AU5$
410 POSITION 10,7 ? AU7$
420 POSITION 10,8:? AU7$
430 POSITION 10,8:? AU10$
440 POSITION 10,9 ? AU11$
450 POSITION 10,10 ? AU13$
460 POSITION 10,11:? AU15$
470 POSITION 10,12:? AU17$
480 IF Y1=12 THEN POSITION 9,11:? AU19$
490 IF Y1=12 THEN POSITION 2,15:? AU22
$;"10  ",AU24$;"10  ",AU26$;"10  "
500 IF Y1=12 THEN POSITION 2,16:? AU28
$;"10  ";AU30$,"10 ":ATT=10:DEC=10:SUS
=10:REL=10:SUSL=10
510 POSITION 2,18:? "|PLAY|":POSITION
2,17:? "┌────┐":POSITION 2,19 ? "└────
┘"
520 POSITION 30,18:? "|RETURN|":POSITI
ON 30,17:? "┌──────┐":POSITION 30,19:P
OSITION 30,19:? "└──────┘"
530 POSITION 2,22 ? "█ █ █ █ █ █
█ █ █ █ █ █ █"
540 POSITION 2,20 ? "   C#  D#    F#  G#
 A#  C#  D#"
550 POSITION 2,21:? "  █    █ █
█ █ █    █ █"
560 POSITION 2,23 ? "A  B  C  D  E  F
  G  A  B  C  D  E";
570 RETURN
580 REM *** CHANGE SOUND REGISTERS ***
590 IF Y=4 OR Y=5 THEN IF AUD1=0 THEN
AUD1=1:POSITION 10,4 ? AU1$:POSITION 1
0,5:? AU4$:RETURN
600 IF Y=4 OR Y=5 THEN IF AUD1=1 THEN
AUD1=0:POSITION 10,4:? AU2$:POSITION 1
0,5:? AU3$:RETURN
610 IF Y=6 AND AUD2=1 THEN AUD2=0:POSI
TION 10,6:? AU6$:RETURN
620 IF Y=6 AND AUD2=0 THEN AUD2=1:POSI
TION 10,6:? AU5$:RETURN
630 IF Y=7 AND AUD3=1 THEN AUD3=0:POSI
TION 10,7:? AU8$:RETURN
640 IF Y=7 AND AUD3=0 THEN AUD3=1:POSI
TION 10,7 ? AU9$:RETURN
650 IF Y>=8 AND Y<=11 THEN POSITION 10
,8 ? AU9$:POSITION 10,9:? AU11$:POSITI
ON 10,10:? AU13$:POSITION 10,11 ? AU15
$
660 IF Y>=8 AND Y<=11 THEN AUD4=0:AUD5
=0:AUD6=0:AUD7=0
670 IF Y=8 THEN POSITION 10,8:? AU10$:
AUD4=1:RETURN
680 IF Y=9 THEN POSITION 10,9 ? AU12$:
AUD5=1:RETURN
690 IF Y=10 THEN POSITION 10,10:? AU14
$:AUD6=1:RETURN
700 IF Y=11 THEN POSITION 10,11 ? AU16
$:AUD7=1:RETURN
710 IF Y=12 AND AUD8=0 THEN AUD8=1:POS
ITION 10,12 ? AU18$:RETURN
720 IF Y=12 AND AUD8=1 THEN AUD8=0:POS
ITION 10,12 ? AU17$:RETURN
730 IF Y=11 AND Y1=12 AND AUD9=0 THEN
AUD9=1:POSITION 9,11 ? AU20$:RETURN
740 IF Y=11 AND Y1=12 AND AUD9=1 THEN
AUD9=0:POSITION 9,11 ? AU19$:RETURN
750 IF Y=15 OR Y=16 THEN IF Y1=12 THEN
 GOSUB 970:RETURN
760 IF Y>18 AND Y<20 AND X<9 THEN GOSU
B 790:RETURN
770 IF Y>16 AND Y<20 AND X>28 THEN POP
:GOTO 60
780 RETURN
790 REM *** PLAY & ***
800 REM *** POKE SOUND REGISTERS ***
810 POKE 53768,0:AUD=0:REP=0
820 IF AUD1=1 THEN AUD=AUD+1
830 IF AUD2=1 THEN AUD=AUD+4
840 IF AUD3=1 THEN AUD=AUD+64
850 IF AUD4=1 THEN DIS=160
860 IF AUD5=1 THEN DIS=192
870 IF AUD6=1 THEN DIS=64
880 IF AUD7=1 THEN DIS=128
890 IF AUD8=1 THEN AUD=AUD+128
900 IF AUD9=1 THEN REP=1
910 IF ADSR=0 THEN DIS=DIS+15
920 POKE 53768,AUD:POKE 764,255
930 IF PEEK(53279)=5 THEN POKE 53760,0
:POKE 53761,0:POKE 53763,0:X=0:Y=10:RE
TURN
940 A=USR(39936,ACL,ADSR,REP,DIS,ATT,D
EC,SUSL+DIS,SUS,REL)
950 GOTO 910
960 REM *** SET UP ADSR ENVELOPE ***
970 POKE 764,255:CH=0:FIG=0:FIG(1)=0:F
IG(2)=0:FIG(3)=0
980 IF X<12 AND Y=15 THEN XX=8:POSITIO
N 2,15:? AU21$:GOSUB 1500:POSITION 2,1
6 ? AU22$:GOSUB 1240
990 IF X>11 AND X<19 AND Y=15 THEN XX=
18:POSITION 11,15:? AU23$:GOSUB 1240:P
OSITION 11,16:? AU24$:GOSUB 1240
1000 IF X>19 AND Y=15 THEN XX=30:POSIT
ION 21,15:? AU25$:GOSUB 1240:POSITION
21,15 ? AU26$:GOSUB 1240
1010 IF X<12 AND Y=16 THEN XX=9:POSIT
ION 2,16:? AU27$:GOSUB 1240:POSITION 2,
16:? AU28$:GOSUB 1240
1020 IF X>11 AND Y=16 THEN XX=30:POSIT
ION 14,16:? AU29$:GOSUB 1240:POSITION
14,16 ? AU30$:GOSUB 1240
1030 IF CH=0 THEN POSITION XX,Y:? "
"
1040 IF STRIG(0)=0 THEN GOSUB 1240:GOS
UB 1240:GOTO 1120
1050 IF PEEK(764)=255 THEN 980
1060 GET #1,A:CH=CH+1
1070 IF A=126 THEN CH=CH-1:GOTO 1120
```

WORDAHOLIC



...really has to be the bargain of the ye

...the most powerful feature of SuperScrip
herefore the poss es are endless...
t is a huge ti worth the mon
ordwraps in fo columns and
range of text t breathtakin
unique calculat ability that h
very satisfactory...remarkably easy and a t
SuperScript is an obvious choice, with amon
strong definition w suprisingly easy to u
this feature makes i very popular word pr
Excellent performanc imple to use it.....
Very satisfied, use the letter writer a

* FROM THE MAKERS OF WORDSTAR *

SUPERSCRIPT
WORDPROCESSING
From the makers of WORDSTAR

Most wordprocessing packages will do the bare minimum. SuperScript can't wait to do the lot!

*** SPECIAL MAIL ORDER PRICES ***
COMMODORE 64, ATARI 800XL/130XE £49.95
COMMODORE 128, APPLE IIc/IIe £79.95
UPGRADE FROM EASYSCRIPT £39.95

JUST LOOK AT THIS WORKLOAD

Takes on	writing, storing and editing all your correspondence and other documents
And	produces letters, invoices, price lists, contracts, labels etc.
Next	runs personalised mailings with lists or database output
Then	creates and revises top quality presentations reports and tables.
On to	typing term papers, technical reports or notes.
And even	adds, subtracts, multiplies, divides and does percentages.
At the same time	giving all round editing and printing facilities such as block cut paste, insert and typeover, full search and replace.
Not to mention	print review, layout options and simplified document selection And much, much more!

SuperScript comes complete with Comprehensive User Manual

ORDER NOW

By calling MicroPro on 01-879 1122 Ext 210
quoting your Access or Visa no

Also available from all good dealers.

MicroPro

UPGRADE FROM EASYSCRIPT TO SUPERSCRIPT – JUST £39.95

* Improved performance *
* Maths *
* Spelling checker *
* Print or view *
* Integrate with SuperBase *
(on Commodore 128)

To Dept AT5 MicroPro International Ltd Haygarth House 28 31 High Street Wimbledon Village London SW19 5BY

Please supply the following (All prices include VAT & Postage) QTY ____ SuperScript package(s) for computer (state model) ____
Commodore 64 Atari 800XL/130XE £49.95 Commodore 128 Apple IIe/IIc £79.95

QTY ____ Upgrade for Easy Script £39.95 for computer (state model) ____
(Your existing Easy Script disk should be returned with this order)

I enclose remittance for £ ____ (Cheques made payable to MicroPro International Ltd)
Or charge my credit card Access/Visa No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Signature ____

Name ____

Address ____

Postcode ____

Tel ____

```
1080 POSITION 08+CH,Y:FIG(CH)=ASC(A$)-4
8:? FIG(CH),
1090 IF CH=34 AND CH=2 THEN 1125
1100 IF CH=2 THEN 1120
1110 POKE 764,255:GOTO 990
1120 FIG=FIG(1)*100+FIG(2)*10+FIG(3)
1130 IF CH=2 THEN FIG=FIG(1)*10+FIG(2)
1140 IF CH=1 THEN FIG=FIG(1)
1150 IF FIG>256 OR FIG<1 THEN ? "ᐅ":GO
TO 970
1160 IF X>11 AND Y=16 AND FIG>16 THEN
? "ᐅ":GOTO 970
1170 IF X<12 AND Y=15 THEN ATT=FIG
1180 IF X>11 AND X<18 AND Y=15 THEN DE
C=FIG
1190 IF X>19 AND Y=15 THEN SUS=FIG
1200 IF X<12 AND Y=16 THEN REL=FIG
1210 IF X>11 AND Y=16 THEN SUSL=FIG
1220 RETURN
1230 REM *** DELAY SUBROUTINE ***
1240 FOR DELAY 1 TO 10:NEXT DELAY:RETU
RN
1250 REM *** INITIALISATION ***
1260 DIM AU1$(30),AU2$(30),AU3$(30),AU
4$(30),AU5$(30)
1270 DIM AU6$(30),AU7$(30),AU8$(30),AU
9$(30),AU10$(30)
1280 DIM AU11$(30),AU12$(30),AU13$(30)
,AU14$(30),AU15$(30),AU16$(30)
1290 DIM AU17$(30),AU18$(30),AU19$(30)
,AU20$(30),AU21$(30),AU22$(30),AU23$(3
0),FIG(3)
1300 DIM AU24$(30),AU25$(30),AU26$(30)
,AU27$(30),AU28$(30),AU29$(30),AU30$(3
0)
1310 ATT=0:SUS=0:DEC=0:REL=0:SUSL=0:X=
0:Y=0:OCT=0:GOSR=0:REP=0:A15=0
1320 POKE 53768,0:AUD=0:SOUND 0,0,0,0
1330 AU1$="1. 64KHz Main Clock Base"
1340 AU2$="1. 64KHz Main Clock Base"
1350 AU3$="2. 15KHz Main Clock Base"
1360 AU4$="2. 15KHz Main Clock Base"
1370 AU5$="3. High Band Pass Filter"
1380 AU6$="3. High Band Pass Filter"
1390 AU7$="4. 1.79MHz Clock        "
1400 AU8$="4. 1.79MHz Clock        "
1410 AU9$="5. Pure Sound           "
1420 AU10$="5. Pure Sound          "
1430 AU11$="6: Distortion No 1     "
1440 AU12$="6: Distortion No 1     "
1450 AU13$="7. Distortion No 2     "
1460 AU14$="7. Distortion No 2     "
1470 AU15$="8. Distortion No 3     "
1480 AU16$="8. Distortion No 3     "
1490 AU17$="9. 5 Bit Poly-counter  "
1500 AU18$="9. 5 Bit Poly-counter  "
1510 AU19$="10: Repeat              "
1520 AU20$="10: Repeat
"
1530 AU21$="Attack:":AU22$="Attack:"
1540 AU23$="Decay:":AU24$="Decay:"
1550 AU25$="Sustain:":AU26$="Sustain:"
1560 AU27$="Release ":AU28$="Release "
1570 AU29$="Sustain Level (1-16) ":AU3
0$="Sustain Level (1-16) "
```

```
1580 AUD1=0:AUD2=0 AUD3=0 AUD4=1 AUD5=
0:AUD6=0:AUD7=0 AUD8=0 AUD9=0
1590 RETURN
1600 FOR I=0 TO 332:READ A:POKE 1536+
I,A:NEXT I
1610 RETURN
1620 DATA 172,11,208,172,0,208,28,104,
104,104,104,104,104,104,104,104,104,10
4,104,104
1630 DATA 104,104,104,104,104,104,96,1
70,202,2,224,250,240,247,169,0,224,52,
208,2
1640 DATA 169,144,224,46,208,2,169,136
,224,62,208,2,169,128,224,50,208,2,169
,121
1650 DATA 224,48,208,2,169,114,224,58,
208,2,169,108,224,45,208,2,169,102,224
,61
1660 DATA 208,2,169,96,224,57,208,2,16
9,91,224,11,208,2,169,89,224,1,208,2
1670 DATA 169,81,224,13,208,2,169,76,2
24,5,208,2,169,72,224,0,208,2,169,68
1680 DATA 224,8,208,2,169,64,224,2,208
,2,169,60,224,10,208,2,169,57,224,6
1690 DATA 208,2,169,53,224,15,208,2,16
9,50,224,7,208,2,169,47,133,207,141,0
1700 DATA 210,201,0,208,1,76,0,166,104
,104,104,133,204,104,104,201,1,208,3,7
6
1710 DATA 173,156,160,160,160,104,133,
205,141,1,210,160,208,201,1,208,15,165
,207,201
1720 DATA 0,240,9,166,141,2,210,169,00
5,141,3,210,160,104,104,164,104,164,10
4 160
1730 DATA 104,104,96,104,104,201,1,240
,5,162,205,142,252,2,104,104,133,208,1
00,16
1740 DATA 133 205,104,104,133,206,165,
208,141,1,210,12,66,157 100,1,157,209,
208,240
1750 DATA 104,160,133,204,160,104,133,
205 165,205,233,1,141,1,210,32,66,152,
233,1
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	5553	20	8809	30	11332
40	8097	50	1902	60	12516
70	9602	80	4191	90	7184
100	7491	110	6497	120	1982
130	1806	140	6985	150	1614
160	14787	170	8150	180	16723
190	17582	200	17062	210	1272
220	1911	230	4023	240	1900
250	1921	260	9682	270	4191
280	7087	290	6915	300	9480
310	3047	320	3043	330	3008
340	2990	350	5972	360	1811
370	3819	380	3788	390	3737
400	3811	410	3025	420	3029
430	3081	440	3888	450	8802
460	4811	470	4028	480	6279
490	11062	500	15589	510	12306
520	16582	530	11432	540	7428
550	9434	560	8150	570	1498
580	6852	590	17810	600	17812
610	11008	620	11015	630	11029
640	11035	650	20219	660	9191
670	9078	680	8089	690	9508
700	9672	710	11262	720	11282
730	13120	740	13144	750	9859
760	9082	770	8171	780	1698
790	2082	800	6057	810	4520
820	4020	830	4900	840	4712
850	4114	860	4125	870	3977
880	4132	890	4011	900	3881
910	4000	920	5821	930	13701
940	11160	950	1633	960	6102
970	8748	980	17831	990	15177
1000	17668	1010	17004	1020	17604
1030	6307	1040	7158	1050	4386
1060	2855	1070	5381	1080	8486
1090	6577	1100	2896	1110	1797
1120	5117	1130	5764	1140	4107
1150	8898	1160	8082	1170	8699
1180	7116	1190	9798	1200	8886
1210	5848	1220	1498	1230	5236
1240	7309	1250	4709	1260	7585
1270	7878	1280	2882	1290	11080
1300	10781	1310	12647	1320	5606
1330	7119	1340	16467	1350	7188
1360	16075	1370	6794	1380	16142
1390	5121	1400	11277	1410	5301
1420	10916	1430	8486	1440	13631
1450	6582	1460	12049	1470	6818
1480	12663	1490	6559	1500	15196
1510	5815	1520	9186	1530	9372
1540	8397	1550	10285	1560	10832
1570	21261	1580	11806	1590	1498
1600	7919	1610	1498	1620	11941
1630	11461	1640	11507	1650	11203
1660	10726	1670	10651	1680	10444
1690	10723	1700	10769	1710	11956
1720	11242	1730	11305	1740	11771
1750	11411	1760	12104	1770	11460
1780	10879				

```
1760 DATA 197,208,208,204,104,104,133,
204,169,15,32,65,157,233,1,208,243,165
,208,233
1770 DATA 1,112,208,104,104,133,204,16
9,208,141,1,210,32,66,157,233,1,157,20
9,208,240
1780 DATA 246,96,104,104,162,58,202,20
8,253,136,208,248,96,0,0,0,0,0,0,0,0
```

Tired of typing?

Take advantage of our finger-saving offer on Page 44

Have fun with the Nurds

WHIRLINURDS is one of the latest releases from US Gold who have a reputation for quality Atari software This is no exception

The plot behind the game is that the four Nurd brothers have run out of food and decide to raid their friend s house a greengrocer called Squalch

He is on holiday and has boobytrapped his house and the Nurds have to avoid the traps and eat all the food

Whirlinurds is basically a game of exploring rooms avoiding traps and getting prizes It may sound all too familiar but is in fact significantly different from other such games.

It is for one to four players who can work individually or as teams

It consists of 50 rooms each with a different set of problems or traps You can start at the beginning of any block of 10 rooms by selecting A-E at the start

However the last 10 rooms are known as the Ultimate Feast and can only be entered by means of a password This is gleaned in four parts by completing each of the previous groups of 10 rooms and is not easy

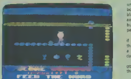
Each room covers an area equivalent to about six screens and the area shown on the screen scrolls very smoothly as you approach the edge

You can imagine 50 rooms like this mean that the game is big and will not be exhausted quickly

Your man is a Nurd a squat plump figure with a stupid grin and a propeller stuck out of his head

The four players are known respectively as Haymiah Pupkin Naples Yertz Hoosaby Nurd and Melvin Lugby They are identical apart from the colour of their shirts

The control of your Nurd is quite novel When walking it is standard – he will walk left when the joystick is pushed left and right when the joystick is pushed right However when the trigger is pressed the propeller starts to rotate and your Nurd will begin to rise



If you release the trigger or if he hits a wall or platform he will begin to descend slowly and will not rise again until he has had his feet on firm ground

He does have an emergency super leap which can be obtained by pushing the stick up This is called a retro boost

You get only one leap per screen or life and here lies a small problem

It is far too easy to accidentally use this leap in the excitement of play and jump straight into disaster or at the least be deprived of it for later use

Your man is manoeuvred around the room collecting food Strange creatures Nurds – they eat anything from pizzas to light bulbs and bicycles

The walls platforms and floors are safe to land on or bump into but anything flashing is deadly

These hazards are exotically named and include slinky snakes bug eyes jump bugs globs spudniks and the Nipple of Death

In addition there are keys which can be used to unlock closed off areas of the rooms but beware – they can also unleash further hazards Small boxes on the floor known as blast squares will give you the same effect as a super leap but also use up your ability to perform these at will

The graphics are very good if not spectacular especially the Nurds They turn slowly in a 3D effect on changing direction

The sound effects are also good and add considerably to the feel of the game

The background music especially adds to the excitement As the time limit for each room runs out the music gradually quickens instilling a sense of urgency in your play

There is also a second level in which the rooms are invisible except for the flashing obstacles The Nurd has a torch illuminating only a small area around him

Whirlinurds is certainly well worth the price of £9 95 or £12 95 on disc It is novel and has a definite goal to achieve which I feel always keeps a game s interest alive

I certainly don t think I ll tire of this quickly

Some of the rooms are extremely difficult and will keep even the most experienced player occupied

Mike Rowe

Living dangerously in the city

YOU don t come across many fantasy role playing games for home computers and I don t class adventures as being in that category so when one appears on the scene it s well worth taking a closer look at

Alternate Reality is such a game and is the best of its kind I ve seen It has excellent graphics bags of action and options and uses music to good effect

You ve been kidnapped by aliens and dumped in a room with only one exit At the start you are presented with a view of the exit gate through which the impressive city of Xebec s Demise can be seen

Search me who Xebec was but since he s described as deceased you can draw your own conclusions about the city s safety

Near the gate which is itself barred by a force field are a collection of revolving numbers These relate to your individual characteristics – strength intelligence stamina charm wealth wisdom skill and hit points

As you pass through the gate the numbers freeze and those values then determine your character s attributes The higher the numbers the better your chances

The aim is to explore the city increase the value of your attributes and above all survive

During the first few days (game time) you are very

→

vulnerable to foul play so must take care to build up your qualities gradually

Details of your status can be called up by pressing the Select key at any time Movement through the maze-like city is controlled by joystick or keyboard

All other commands mostly single characters are entered through the keyboard

Your current position in the city is shown in the top half of the screen the lower portion being reserved for commands options and other text

Much of the city consists of walled avenues Closer inspection of any wall may reveal the entrance to a building or even a secret passage

When you enter a building the screen changes to show a hi-res picture often animated of the building s inhabitants and interior

There are many buildings in the city Some are for your rest and recuperation Inns offer lodgings and give time and date information

Taverns whose menus change hourly sell food and drink Alcohol as you d expect should be taken in moderation Get drunk and your movements will be inhibited – you may even black out.

Smithies easily detected by the sound of an anvil being struck provide weapons Prices and quality may vary and you ll almost certainly need to haggle

You can earn interest on your money by leaving it in a bank and can exchange gems for cash Shops sell a variety of clothes and goods mostly ornamental If you become ill or wounded visit a healer

Weapons can be magical (special or cursed) or just normal and can be found or purchased If you want to rid yourself of a cursed weapon try a Guild

There are many life forms in the city Guards gladiators merchants dwarves mages assassins and imps are just a few All have their own specialities

The worst is reported to be the legendary Night Stalker an extremely powerful creature of the night

Encounters are common and take one of five forms – you surprise a life form it surprises you you see each other at the same time it sees you first or you see it first

At an encounter you are either engaged or disengaged Engaged means you do battle and options include lunge attack parry and sneak attack

If disengaged you may try less violent means – charm or trick an opponent for example The use of magic cannot be ruled out either

Other hazards include being poisoned from a variety of sources – like being clawed by a poisonous creature and catching a disease – such as contact with bacterial spores of mold

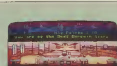
Potions can be acquired and take four forms benign advantageous disadvantageous and dangerous Each can be opened examined for colour sipped and used All text is presented in olde English type script and musical effects are used throughout the game Both add to the atmosphere while the latter can hold clues – the songs played in the taverns often provide important hints

The city is intended to be just the first in a linked series and since you can save and later reload your character this means you can retain any character for use in later releases Future additions include the dungeon wilderness arena and palace

The game plays a bit slowly mainly because it has to make so many accesses to the disc during play (the program and data is spread across four sides of two discs)

That apart it is very enjoyable The atmospheric detail and presentation the wide variety of content and the planned expansion route make Alternate Reality an excellent buy at £19 95

Bob Chappell



Hit Points : 10
You are at the Best Bargain Store

Welcome Stranger!

Do you wish to see our wares?
Yes if you do or No if not

Your coins in copper 198

Spellbreaker's something

ONCE upon a time when I was but a mere apprentice necromancer to whom the word grue meant nothing I had the good fortune to thrash the evil warlock Krill

He was an ambitious wizard aspiring somewhat immodestly to rule the world I managed to frustrate his little game my inexperience succeeding where others more learned had failed

For my efforts I was admitted to the famed Circle of Enchanters and regarded as second only to the great Belboz

Then Belboz himself landed in the newt soup and I had my work cut out trying to rescue him from the clutches of the odious Jeearr That s how I came to be where I am today top dog of the Circle of Enchanters

Having thus completed those two superb Infocom adventures **Enchanter** and **Sorcerer** (rated as standard and advanced level) it was with anticipated pleasure and a touch of smugness that I took delivery of the third in the Enchanter trilogy **Spellbreaker**

Those obliging people at Software Express waved their magic wand and sent a review copy of Spellbreaker winging towards me as soon as it arrived in the UK.

Removing the usual glossy and handsome box from the sturdy packaging my eyes fell on two words which gave the old ego pause for thought – Expert level

Spellbreaker begins in the council chamber of Borphee where the Guildmasters are up in arms You stand at the edge of the gathering listening to the complaints

Sneffle the baker moans that he now has to make his butter pasties by hand His usual method of casting a Gloth spell to fold the pastry 83 times is no longer reliable

Hoobly the brewer grumbles that his spells are not working either and as a result he s getting cherry flavoured liquid from his vats and the beer tastes like grues have been bathing in it.

Gzomplatz the huntsman says wild animals are over-running the town The Frpple spell no longer keeps the animals outside the boundaries and only recently one of his men was attacked by a troop of rat ants

The Guild think the Circle of Enchanters have a lot to answer for and many eyes turn contemptuously on you

Ardis the poet starts to speak about magic rhyming and spelling aids when in the midst of his splendid peroration just as he s sketching out a mythological skit in iambic hexameter he turns green (well greener than usual) His chin elongates his skin slimes up and he promptly turns into a newt

He s not alone – all the Guild have turned into frogs salamanders or other amphib-

The ST deserves better graphics

LANDS of Havoc was one of the first graphics games out for the ST. Not surprising though as it is a translation of a program for the Sinclair QL which uses a cut down version of the 68000 microprocessor in your ST.

This is a graphics adventure game boasting over 2000 screens. The theme is laid out in a small, attractively printed booklet.

The land of Haven which was cared for by a benign magician, High Vanish, has been turned into an evil land, Havoc, by the Dark Lords.

You play the role of Sador, half man – half reptile and have to find your way around Havoc following clues and instructions left by the magician. The program is well packaged in a sturdy box which also contains nine colour maps.

The game starts by setting out the nine areas these maps cover in a random pattern and you lay out the maps in the same pattern.

Each map covers nine screens giving a total of 81 screens to explore in the opening section.

The screens are similar, consisting of passages and junctions seperated by walls.

The walls in each screen are always made up by the same blocks of graphics characters in one colour only.

However they vary from screen to screen and are effectively detailed. The passages are colonised by various creatures including scorpions and ghosts who try to attack you, sapping your energy on contact.

You have a gun but can only fire horizontally. The creatures move smoothly and are vividly animated but unfortunately Sador flickers badly. In this part of the game you must find the entrance to the following part by collecting or touching various items in a specific order.

Instructions are given as you go along after finding the first item, the Book of Change, which is the most difficult to spot.

As you find objects the creatures chasing you get faster and more deadly.

After the first 81 screens are completed you are transported to the underground caverns, the Lair of the Trolls.

The graphics and game is similar except that the walls are all in one colour.

Here you must collect five tokens and then touch the portal to the next section.

By now the creatures are even faster and are difficult to avoid.

The maze of corridors is challenging, as you can often see where you want to be but may have to traverse many rooms in a round-about fashion to get there. I suggest you make a map as you go along.

On completing this task you enter the Keep of The Dark Lords. This is similar to the last section except more difficult still.

You are told that here you must destroy the Lords by touching all nine of them in turn – your gun has no effect on them.

This is as far as I have been able to reach. The game is obviously considerably larger because when killed off I was told that I had only completed 8.5 per cent of the adventure even at this stage.

Overall the program is somewhat disappointing considering the capabilities of the ST. Graphics are mediocre, sound consists of occasional hisses although the music is good. The flickering is not really good enough.

On the plus side the plot is good and it is quite playable but with little variety.

At £19.95 it is good value.

Having said the game was a slight let down, I did have the urge for one more go to get further on – this is often the sign of a game with lasting appeal.

Mike Rowe

# of a spellbinder

lans. All except you – and one other, a shadowy figure in a dark cloak who slips out of the door. You pursue him to the town square where he disappears, engulfed in a cloud of orange smoke, leaving behind (once the amber fog has dispersed) nothing but a featureless white cube.

And so the battle of good against evil begins. Magic is going awry. It is your task to get to the root of this paralysing blight that threatens to destroy the kingdom.

Your journey will take you to strange places where you'll meet even stranger beings.

Among the earlier curiosities you'll encounter is a tail-swallowing serpent whose mammoth body forms a huge loop through three tunnels of a cave.

Another is a beautifully described mountain ogre. He has brilliant purple carbuncles and hair matted down with something slick and pungent.

Watch out for a roc the size of an elephant whose hatching egg is itself as big as a small wagon.

As well as a knife and magic burin (engraving tool) you also start out with your indispensable book of re-usable spells.

Other spells can be added to the book by finding spell scrolls, of which there are many scattered around the kingdom, and then writing them into the book by using the special Gnusto spell.

Some spell scrolls are too powerful to be written in the book. These spells can be used directly from the scroll but will only work once.

If you've played Enchanter or Sorcerer you'll be familiar with casting such spells as Yomin (mind probe), Rezrov (open a locked or enchanted object), Frotz (give light from an object) and Malyon (animate).

There are plenty of new ones here – how about Caskly, Throsk and Girgol.

This is Infocom's 18th adventure and the standard remains as high as ever – just how many companies can you recall that have produced almost a score of first-rate pieces of software in a row?

They've even added a new command to their already sophisticated parser.

If you type in a sentence with one word wrong, for example "Put the silver cubw in the green box", you can correct yourself simply by making your next command OOPS word (Oops cube). This saves you typing in a long sentence all over again.

A gripping story, huge vocabulary – over 900 words – vivid descriptive prose, tantalising puzzles and delightful humour. In a word, Spellbreaker.

Don't hang about – Rezrov your cashbox, Malyon those legs down to the nearest phone and order Spellbreaker from Software Express or your local dealer now.

Bob Chappell

Comp

SAVE £25

This Month's Megad

Atari 1

DISK DRIVE P

With - FREE · FRE

Exclusive Blue Ribbon Game Di sk
Box of 10 Blank Di
DOS 2·5 - H.F.M. - Pay of

£127

Blank Disks

Quality 5¼" Blank Disks		FREE · FREE · FREE
Single Sided 10 Double Density	£9·95 +£1p.p	Plastic Library Case Free with Ten Disks Worth - £3
Double Sided 10 Double Density	£13·95 +£1p.p	
Single Sided 50 Double Density	£49·95 +£2p.p	Perspex Storage Box Free with Fifty Disks Worth - £10
Double Sided 50 Double Density	£69·95 +£2p.p	AVAILABLE NOW 3½ Microdisks for Your ST

LIFETIME WARRANTY

SEE NE MO TH

Goods despatched same day . . . . Dis

Please send chequ es/

VISA

Access

COMPUMA RT
71 Gracedieu Roa d,
Leics. LE11 0QF Te

pmart

gadeal

1050

E PACK

REE·FREE

Di k – Worth £10
ink Disks Worth £10
oy ff & Demo Disks

. 00
£3p&p

EE NEXT
ION TH'S
ATARI
gadeal

This Month's FREEBIE is.....
The Exciting...
Blue Ribbon Games Disk No 1
5 Great NEW Games with
our Disk Drive Pack

Atari Hardware

Atari 130XE-128K Computer FREE Miner 2049'er Cartridge	£109.00 £3p.p
Atari 1029-Dot Matrix Printer Free Atari Writer word processor disk	£117.00 £3p.p
Atari XCII-Program Recorder	£32.00 £2p.p
Atari 1027-Letter Quality Printer Free Atari Writer word processor disk	£145.00 £3p.p
Atari-Word Processor Pack	Call for Details
Atari 1050-Disk Drive	£129.00 £3p.p

We Stock a Wide Range of ATARI Peripherals
Call NOW for Incredibly Low Prices

SEE THIS
MONTH'S
ATARI
megadeal

Disl s 1st class post, Hardware – parcel post

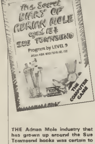
equ es/postal orders to:

MA
Roc f (Dept AU)
F . Loughborough
Tel 0509-262259

Compumart
0509~262259
HOTLINE

The Mole with a personality crisis?

By Brillig



THE Adrian Mole industry that has grown up around the Sue Townsend books was certain to spawn a computer game

The Secret Diary of Adrian Mole arrived from Mosaic Publishing on tape for the Atari 48k range with a dogs head toothbrush and shaving kit depicted on the cover accompanying the rather more impressive credentials of Level 9 as the programmers

The blurb to the game is predictably in Mole ese something I will try to avoid It comes in four parts and you have to assist Adrian in his quest to become more popular Alternatively as the game suggests you could try to become as unpopular as possible

Each chunk of game covers three months of the unfortunate Mole's life You are presented with a scrolling diary in the normal Level 9 text fashion below the now obligatory graphics

Occasionally you are asked to select a course of action for Adrian to follow from the three or four provided Sometimes you are given a percentage score and a comment as to your status

And that is about all that does happen It is a shame that such a good idea has been wasted

The text is excellent not only as you would expect from the best selling books but also from the extra text added by Pete Austin

But the graphic screen at the top adds nothing to the atmosphere of the game and yet its very existence results in the increased requirement of the Press any key to continue prompt which dogged my progress throughout

The scoring routine adds little either firstly because the remarks are rather wearing once into the second half of the year and secondly because as it appears as a prompt during the diary you can not see how your actions are affecting the score

I must stress that at times the game did make me laugh at the antics of Master Mole The beauty of the books however was that the themes were developed throughout with notable hilarious incidents woven around them In the game the themes such as Mrs Mole leaving home and the red socks episode become small incidents that suddenly happen The

Help!

I ve had some appeals for help

Craig Fippard offers his maps of Voodoo Castle Zork I, Colossal Adventure and Feasibility Experiment Quite a mixed bunch there and although we offer no prizes for such contributions they are most welcome Craig is trying to repair the lantern in Feasibility Experiment and wonders whether anyone else can help him

S Goring has gone one better and sent his map of Colossal However, this does not include the 70 location and game of Level 9 as it was taken from a DEC mainframe

The map is detailed and well drawn – obviously the culmination

of several month s lunch breaks

Compass directions are freely noted for reference, a point often neglected by adventurers when they play but regretted when they return to the game several weeks later

Dawn Ward would like some hints on Mordon s Quest. I did not know it was available on the Atari, but diligent research has discovered you need to drop the blanket to prevent that sinking feeling, a gallic kind of sacrifice is called for to get through the waterfall and there is a place where you can fill the aqualung to stop drowning

books were in the first person and succeeded because everyone who read them identified with and to an extent became Adrian Mole.

The game is purely an exercise in route finding through a series of set pieces, and the player becomes essentially a reader without the benefit of real involvement.

Often just as I was getting into a route which appeared to be entertaining up would come a screen full of text and the game would change direction once again.

I think this is a great shame. We saw what can happen to a comedy classic in Hitchhiker's Guide to the Galaxy. The Secret Diary of Adrian Mole had the same potential. Unfortunately it seems to be left peering contemplatively at itself in the bathroom mirror.

■ *Next month I hope to review a load of new adventures released at the Atari Show, as well as seeing what is new and exciting in the world of Atari.*

Glitches of the Month:

Glitch of the Month brings two similar problems in different Level 9 games.

As in Mordon's Quest breathing underwater features in both Red Moon and Adventure Quest. In the latter S Watson points out that if you enter the river with nothing, go to the shelf, get the fish, enable your breathing and return to the river you no longer need go through the process of getting and dropping the fish to be able to breath in different environments.

S Calkin has found in Red Moon that once you have the pipes and helmet you can wander for miles underwater without ever having to fix the pipes or worry about them being too short.

Thank you folks, your T shirts are in the post. Not so the T shirt for Geoffrey McHugh, who supplied our December Glitch. Sorry but we've lost your address in the editorial maze. If you contact the office all can be resolved.

York Computer Centre

THE ATARI SPECIALIST IN YORKSHIRE!

Atari 130 XE	£119.95
Atari 1050 Disc Drive	£129.95
Atari 1029 Dot Matrix Printer	£129.95
Atari 130 XE Disc Drive Pack	£285.00
Atari 130 XE Disc Drive Printer Pack	£350.00
Atari 520 ST B/W Pack	£749.95
Atari 520 ST Colour Pack	£969.95

MEMORY UPGRADES!

600XL to 64K Kit	£49.95
600XL to 128K Kit	£89.95
800XL to 128K Kit	£59.95
800XL to 256K Kit	P.O.A.

All the latest software PLUS golden oldies at discount prices
Please ring for details. Large selection of books and magazines

S/S D/D Discs **£17.50** per box of 10
D/S D/D Discs **£20.00** per box of 10

(100% CERTIFIED ERROR FREE)
All prices are inclusive of VAT & P&P

7 STONEGATE ARCADE
YORK
TEL: 0904 641862

MIDI SYNTHESISER INTERFACE
for the Atari 400/800/XL/XE Computers

DigiComm MIDI

Bored with the Atari SOUND channels? Why not connect a powerful MIDI digital synthesiser to your Atari? Plug in the DigiComm MIDI interface and you can remotely control ANY MIDI musical instrument – from synthesisers to drum machines. Recreate your favourite pop song or compose your own. System includes MIDI Interface, MIDI Player, MIDI cables and MIDI tutorial.

£PHONE

More MIDI software is currently under development. CASIO CZ Digital Synthesisers (as used on some of the latest pop records) are now available from DigiComm.

Please write or phone for details of RS232 interfaces, tape/disk utilities and blank disk offers

Atari and CASIO are registered trade marks of the companies concerned

DigiComm

170 Bradwell Common Boulevard, Milton Keynes,
Bucks MK13 8BG
Tel (0908) 663708

BASIC COMPILER

Part Two of the series by FRANK O'DWYER that helps you speed up your programs

HERE is the second part of the Basic compiler program – the compiler library. You should type it in using the Atari assembler/editor cartridge or compatible assembler, and save it on a cassette by itself.

This cassette and the one containing the compiler program given last month will be required every time you compile a program.

You don't really know enough about the compiler to begin to write and compile your own programs yet so for now let's try to compile the Basic program given as Program II.

This is simply a demonstration program – don't worry about how it works for now. It produces random sounds and patterns until a key is pressed. An equivalent program written in Atari Basic is given as Program III. You can type this in to compare the speed of Atari Basic with Compiler Basic.

Compilation is essentially a three stage process. First you create your program – this is called editing. Then comes compilation, where the program is translated from Basic into Assembly language. Finally comes assembly and execution. Here you assemble the program and run it. If at any stage you make a mistake you must go back to stage one.

Let's go through the three stages with the example Program II.

● Editing

For this you will need a text editor. If you are using the Atari assembler cartridge this is no problem since one is included in the cartridge. If using some other assembler program then you can probably use its text editor for this purpose. If not you will have to beg, borrow or steal a text editor from somewhere.

Type in your program using the text editor – the NUM command of the Atari assembler/editor cartridge can be used to supply automatic line numbering. Type in Program II in this way, making sure you have the assembler cartridge plugged in since Atari Basic will reject Compiler Basic with syntax errors.

Type in the program as given. Note that the compiler does not recognise abbreviations such as POS. for POSITION and ? for PRINT. When sure you have typed the program correctly save it on its own cassette.

Use the LIST#C command of the assembler cartridge. This saves the program in Ascii character form on the cassette and is the only form the compiler will recognise – so if you are using an assembler other than the Atari version you must use an equivalent command. The cassette you have just made will now be referred to as the source program or source file.

● Compiling

Plug in the Basic cartridge and load the compiler program given last month. Now insert the cassette containing the source program. Don't forget to rewind the tape. RUN the compiler which will prompt you for the source file name. The correct response is C for cassette. Press Play on the cassette drive, and Return on the computer as if you were loading a program.

You should see Program II being listed out on the screen and the compiler will prompt you for the start address of the Assembly language. The answer to this is really up to you but I suggest 14336 for this example which is the address of the last 2k on a 16k Atari.

Now you will be prompted for the start line number for the Assembly language – almost any number greater than 1000 will do here so just enter 1000 for now. Almost invariably you will enter 1000 in response to this question – other responses are only required if you want to have more than one compiled program share the same compiler library and this is a topic which I will return to in a later article.

The next question to answer is the Filename for the Assembly language. Assuming you are using cassette, the correct answer is C. Before you respond you should insert a cassette ready to take the program which the compiler is about to generate. Press Play and Record on the cassette then Return when you hear the two beeps.

The compiler will display each line number as it is compiled and will finish by telling you how many errors it discovered in your program. If there were none you can proceed to the next step. If there were errors then you must go back to stage one.

● Assembly

Insert the assembler cartridge and rewind the cassette you have just made. Type ENTER#C to load the

```
1000 REM COMPILER DEMO
1010 CLOSE #6:OPEN #6,12,3,"S:":REM GRAPHICS 3+16
1020 S=@88:POKE 764,255:REM CLEAR ANY KEYPRESS
1030 F=?53770?200:REM RANDOM NUMBER BETWEEN 0 AND 199
1040 POKE S+F,?53770:REM POKE RANDOM BYTE TO SCREEN DISPLAY
1050 ZERO R:FOR R TO 3:REM CYCLE THROUGH SOUND CHANNELS
1060 SOUND R,?53770,10,8:REM RANDOM PITCH
1070 NEXT R
1080 IF ?764=255 THEN GOTO 1030 ENDIF:REM LOOP BACK IF NO KEY PRESSED
1090 ZERO R:FOR R TO 3:REM SILENCE SOUND CHANNELS
1100 SOUND R,0,0,0
1110 NEXT R
1120 BASIC
```

Program II Compiler demo program

```
1010 CLOSE #6:OPEN #6,12,3,"S:":REM DO
 SIMPLY GRAPHICS 3+16
1020 S=PEEK(88)+256*PEEK(89):POKE 764,
255
1030 F=INT(RND(0)*200)
1040 POKE S+F,PEEK(53770)
1050 FOR R=0 TO 3
1060 SOUND R,PEEK(53770),10,8
1070 NEXT R
1080 IF PEEK(764)=255 THEN GOTO 1030
1090 FOR R=0 TO 3
1100 SOUND R,0,0,0
1110 NEXT R
1120 END
```

Program III Equivalent Atari Basic to Program II

Assembly language. Now insert the cassette with the compiler Library on it and merge it with what you have already using ENTER#C:M.

If all has gone well you now have one large assembly language program equivalent to the Basic program you originally entered. You must assemble this program and since it is likely to be large you should do so directly to cassette using ASM #C. This produces yet another cassette file.

Before telling you how to execute your program I must draw your attention to a problem with the ASM #C command in the Atari cartridge. It falls down badly when files are long.

Since the assembler is quite slow in this circumstance a long leader is formed on the tape if the cartridge is left to its own devices (the leader is the tone you hear prior to a tape file being loaded or saved).

Press Pause on the tape drive, and Ctrl-1 on the computer which freezes the listing.

After a minute or two the cursor disappears and you disengage the Pause on the tape drive and press Ctrl-1 so that the listing begins to appear on the screen. You can now leave the computer to get on with the assembly. Any errors mean that you must go back to the first step.

After the assembly process you are left with a cassette containing the machine code bytes for your program. Typically this extends for 2k of machine language and so I recommend 14336 as the start address of the Assembly language.

Once you have chosen this address you are stuck with it and you must poke the bytes for the machine language to this location in memory since it will not run properly if it is placed anywhere else in memory – it is what is known as position-dependent code or non-relocatable code.

The problem you are faced with now is how to get the bytes from the cassette into memory. Below is a short Atari Basic program which will do the trick (Program IV).

```
10 CLOSE #1: OPEN #1,4,0,"C:"
20 FOR N=1 TO 6 GET #1,C.NEXT N
30 POKE 106,40: GRAPHICS 0. REM RESERVE SOME
   MEMORY FOR PROGRAM
40 FOR A=14336 TO 16384 GET #1,C POKE A,C: NEXT A
```

Program IV Putting the bytes into memory

To use this routine insert the cassette with the machine language and press Play on the tape drive. Run the program and press Return when you hear the beep. Let the program run until it comes up with Error 136. This means, somewhat perversely, that the program was successfully loaded.

Do not press System Reset since this will wipe the machine language program from memory.

To invoke the machine language type X=USR(14336). In the case of the example Program II you should now hear random sound and see random patterns on a Graphics 3 screen. When you are tired of this press any key and you will be returned to Basic. You can return to the machine language any time – provided you don't reset the machine – by typing X=USR(14336).

● *That's how to use the compiler. Next month I will discuss the features of the Compiler language and begin to explain how you can write your own programs in Compiler Basic.*

Listing overleaf

Program I

```
02 EOUTCH=$F6A4
03 CDR=$342
04 BUF=$344
05 BUFL=$348
06 AUX1=$34A
07 AUX2=$34B
08 CIO=$E456
09 STACK=$600
10 GET=$F6E2
11 R1=$D4
12 R2=$D6
13 A1=$CB
14 A2=$CD
15 A3=$CF
16 TOP=$D0
17 SP=$D1
18 A45=MIN
19 A63=DO
20 A43=PLUS
21 A42=MULT
22 A47=DI
23 A33=PEEK
24 A64=DEEK
25 A60=LT
26 A62=GT
27 A61=EQ
28 A38=AND
29 A94=XOR
30 A124=OR
31  JMP BASIC
32 INIT PLA
33  STA R1
34  PLA
35  STA R2
36  LDX #0
37  PLA
38  TAY
39  CLD
40  STA V,X
41  TYA
42  STA V+1,X
43  CPY #0
44  BEQ EX
45 LL INX
46  INX
47  INX
48  TAX
49  PLA
50  STA V+1,X
51  PLA
52  STA V,X
53  DEY
54  BNE LL
55 EX TSX
56  STX SP
57  LDA R2
58  PHA
59  LDA R1
60  PHA
61  RTS
62 V .BYTE "A...B.. C ..
   D ..E.. F...G.. H . I .
   J ..K...L . M .N . O
   P...Q...R...'
63 SVB .BYTE "S.. T...
   U .V  W . X...Y.. Z . "
64 TMP1 .WORD 0
65 PTR .WORD 0
66 BASIC LDX #0
67  TXS
68  RTS
69 EQ STA R2
70  STX R2+1
71  LDA R1
72  CMP R2
73  BNE FALSE
74  LDA R1+1
75  CMP R2+1
76  BNE FALSE
77 TRUE LDA #1
78 TR1 LDX #0
79  STX R1+1
80  STA R1
81  RTS
82 FALSE TYA
83  BEQ TR1
84 NE JSR EQ
85  JMP NOT
86 LT STA R2
87  STX R2+1
88  LDA R1+1
89  CMP R2+1
90  BEQ TLO1
91  BCS FALSE
92  BCC TRUE
93 TLO1 LDA R1
94  CMP R2
95  BCS FALSE
96  BCC TRUE
97 LE JSR GT
98  JMP NOT
99 GT STA R2
0100  STX R2+1
0101  LDA R1+1
0102  CMP R2+1
0103  BEQ TLO
0104  BCS TRUE
0105  BCC FALSE
0106 TLO LDA R1
0107  CMP R2
0108  BEQ FALSE
0109  BCC FALSE
0110  BCS TRUE
0111 GE JSR LT
0112 NOT JSR IF
0113  BNE FALSE
0114  BEQ TRUE
0115 IF LDA R1
0116  ORA R1+1
0117  RTS
0118 XOR STA R2
0119  STX R2+1
0120  LDA R1
0121  EOR R2
0122  STA R1
0123  LDA R1+1
0124  EOR R2+1
0125  STA R1+1
0126  RTS
0127 AND STA R2
0128  STX R2+1
0129  LDA R1
0130  AND R2
0131  STA R1
0132  LDA R1+1
0133  AND R2+1
0134  STA R1+1
0135  RTS
0136 OR STA R2
0137  STX R2+1
0138  LDA R1
0139  ORA R2
0140  STA R1
0141  LDA R1+1
0142  ORA R2+1
0143  STA R1+1
0144  RTS
0145 PLUS STA R2
0146  STX R2+1
0147  CLC
0148  LDA R1
0149  ADC R2
0150  STA R1
0151  LDA R1+1
0152  ADC R2+1
0153  STA R1+1
0154  RTS
0155 MIN STA R2
0156  STX R2+1
0157  SEC
0158  LDA R1
0159  SBC R2
0160  STA R1
0161  LDA R1+1
0162  SBC R2+1
0163  STA R1+1
0164  RTS
0165 MULT STA R2
0166  STX R2+1
0167  TYA
0168  STA TMP
0169  STA TMP+1
0170  LDX #16
0171 M1 LSR R2+1
0172  ROR R2
0173  BCC M2
0174  CLC
0175  LDA R1
0176  ADC TMP
0177  STA TMP
0178  LDA R1+1
0179  ADC TMP+1
0180  STA TMP+1
0181 M2 ASL R1
0182  ROL R1+1
0183  DEX
0184  BNE M1
0185  LDA TMP
0186  STA R1
0187  LDA TMP+1
0188  STA R1+1
0189  RTS
0190 DIV STA R2
0191  STX R2+1
0192  TYA
0193  STA TMP
0194  STA TMP+1
0195  STA TMP1+1
0196  LDA #1
0197  STA TMP1
0198  LDA R2+1
0199  ORA R2
0200  BEQ RE
0201 JUST LDA R2+1
0202  BMI DV0
0203  BNE DV0
0204  ASL R2
0205  ROL R2+1
0206  ASL TMP1
0207  ROL TMP1+1
0208  BCC JUST
0209 DV0 LDA R1+1
0210  CMP R2+1
0211  BEQ LO
0212  BCS DV1
0213  BCC DV2
0214 LO LDA R1
0215  CMP R2
0216  BCS DV1
0217  BCC DV2
0218 DV1 LDA R1
0219  SBC R2
0220  STA R1
0221  LDA R1+1
0222  SBC R2+1
0223  STA R1+1
0224  LDA TMP
0225  ORA TMP1
0226  STA TMP
0227  LDA TMP+1
0228  ORA TMP1+1
0229  STA TMP+1
0230 DV2 LSR R2+1
0231  ROR R2
0232  LSR TMP1+1
0233  ROR TMP1
0234  BCC DV0
0235 RE RTS
0236 DI JSR DIV
0237  LDA TMP
0238  STA R1
0239  LDA TMP+1
0240  STA R1+1
0241  RTS
0242 MO JSR DIV
0243  RTS
0244 INC INC V,X
0245  BNE RE
0246  INC V+1,X
0247  RTS
0248 DEC DEC V,X
0249  LDA V,X
0250  CMP #$FF
0251  BNE RE
0252  DEC V+1,X
0253  RTS
0254 SAVE LDX #16
0255  CLD
```

```
0256 SL LDA A1-1,X
0257  STA S-1,X
0258  DEX
0259  BNE SL
0260  EOR TMP1
0261  STA T
0262  LDA TMP1+1
0263  STA T+1
0264  RTS
0265 T .WORD 0
0266 S .BYTE "[illegible]"
0267 EXIT LDX #14
0268 EL LDA S-1,X
0269  STA A1-1,X
0270  DEX
0271  BNE EL
0272  LDA T
0273  STA TMP1
0274  LDA T+1
0275  STA TMP1+1
0276  RTS
0277 PEEK LDA (R1),Y
0278  STA R1
0279  TYA
0280  STA R1+1
0281  RTS
0282 DEEK LDA (R1),Y
0283  TAX
0284  INY
0285  LDA (R1),Y
0286  STA R1+1
0287  STX R1
0288  DEY
0289  RTS
0290 POKE LDA R1
0291  STA (A1),Y
0292  RTS
0293 DOKE LDA R1
0294  STA (A1),Y
0295  LDA R1+1
0296  INY
0297  STA (A1),Y
0298  DEY
0299  RTS
0300 LDL STA R1
0301  STX R1+1
0302  RTS
0303 LDI LDA V,X
0304  STA R1
0305  LDA V+1,X
0306  STA R1+1
0307  RTS
0308 RESTORE STA PTR
0309  STX PTR+1
0310  RTS
0311 READ LDA PTR
0312  STA TMP
0313  LDA PTR+1
0314  STA TMP+1
0315  LDA (TMP),Y
0316  STA V,X
0317  TYA
0318  STA V+1,X
0319  INC PTR
0320  BNE RET
0321  INC PTR+1
0322 RET RTS
0323 POSITION LDA A1
0324  STA 85
0325  LDA R1
0326  STA 84
0327  RTS
0328 SETCOLOR LDX A2
0329  LDA A1
0330  ASL A
0331  ASL A
0332  ASL A
0333  ASL A
0334  ORA R1
0335  STA 704,X
0336  RTS
0337 SOUND STY 53768
0338  LDA #3
0339  STA 53775
0340  LDA A3
0341  ASL A
0342  TAX
0343  LDA A2
0344  STA 53760,X
0345  LDA A1
0346  ASL A
0347  ASL A
0348  ASL A
0349  ASL A
0350  ORA R1
0351  STA 53761,X
0352  RTS
0353 BPRINT PLA
0354  STA TMP
0355  PLA
0356  STA TMP+1
0357 PL INC TMP
0358  BNE CC
0359  INC TMP+1
0360 CC LDA (TMP),Y
0361  CMP #$FF
0362  BEQ FF
0363  JSR EOUTCH
0364  LDY #0
0365  BEQ PL
0366 FF LDA TMP+1
0367  PHA
0368  LDA TMP
0369  PHA
0370  RTS
0371 ANR LDA R1
0372  STA A1,X
0373  LDA R1+1
0374  STA A1+1,X
0375  RTS
0376 LIN INX
0377  INX
0378 MOV LDA R1
0379  STA V,X
0380  LDA R1+1
0381  STA V+1,X
0382  RTS
0383 LOW LDA V,X
0384  PHA
0385  LDA V+1,X
0386  TAX
0387  PLA
0388  RTS
0389 STP .BYTE 0
0390 PUSH CLC
0391  LDY STP
0392  TYA
0393  ADC #4
0394  STA STP
0395 PSH LDA V,X
0396  STA STACK,Y
0397  INX
0398  INY
0399  BEQ OVR
0400  CPY STP
0401  BNE PSH
0402  LDY #0
0403  RTS
0404 PULL SEC
0405  LDY STP
0406  TYA
0407  SBC #4
0408  STA STP
0409 PLL DEY
0410  CPY #255
0411  BEQ UNDR
0412  LDA STACK,Y
0413  STA V+3,X
0414  DEX
0415  CPY STP
0416  BNE PLL
0417  LDY #0
0418  RTS
0419 UNDR JSR ERR
0420  JSR BPRINT
0421  .BYTE "PULLS",155,255
0422  RTS
0423 OVR JSR ERR
0424  JSR BPRINT
0425  .BYTE "PUSHES",155,255
0426  RTS
0427 ERR LDY #0
0428  JSR BPRINT
0429  .BYTE 253,"STACK ERROR
   - TOO MANY ",255
0430  RTS
0431 BUFS JSR LOWF4A
0432 BFS LDA R1+1
0433  STA BUF+1,X
0434  LDA R1
0435  STA BUF,X
0436  RTS
0437 LOWF4A ASL A
0438  ASL A
0439  ASL A
0440  ASL A
0441  TAX
0442  RTS
0443 OPENC LDA A3
0444  JSR BUFS
0445  LDA #3
0446 NI STA COM,X
0447  LDA A2
0448  STA AUX1,X
0449  LDA A1
0450  STA AUX2,X
0451 CIOR JSR CIO
0452 STAT STY SVR
0453  TYA
0454  LDY #0
0455  STY SVR+1
0456  TAX
0457  BMI HNDL
0458 IOER RTS
0459 HNDL LDA TRF
0460  BNE IOER
0461  PLA
0462  PLA
0463  JMP (TEMP)
0464 TEMP .WORD 0
0465 TRF .BYTE 0
0466 CLOSEC LDA R1
0467  JSR LOWF4A
0468  LDA #12
0469  BNE NI
0470 PUTC LDA A1
0471  JSR LOWF4A
0472  LDA #11
0473  STA COM,X
0474  TYA
0475  STA BUFL,X
0476  STA BUFL+1,X
0477  LDA R1
0478  JMP CIOR
0479 GETC LDA R1
0480  JSR LOWF4A
0481  LDA #7
0482  STA COM,X
0483  TYA
0484  STA BUFL,X
0485  STA BUFL+1,X
0486  JSR CIO
0487  STA R1
0488  LDA #0
0489  STA R1+1
0490  BEQ STAT
0491 XIOC LDA A2
0492  JSR LOWF4A
0493  LDA A3
0494  STA COM,X
0495  LDA A1
0496  STA AUX1,X
0497  LDA R1
0498  STA AUX2,X
0499  STX CHN
0500  RTS
0501 XIO2 LDX CHN
0502  JSR BFS
0503  JMP CIOR
0504 CHN .BYTE 0
0505 MAIN
0506  LDY #0
0507  STY STP
0508  STY TRF
```

Note: For presentation purposes lines 62, 63 and 0429 have been wrapped round. They should be entered as continuous lines

SOFTWARE EXPRESS

COMPUTER SYSTEMS LIMITED

8 + 16 BIT HARDWARE & ACCESSORIES

520STM (with Modulator)	£299.99
520STFM as above with Built in ½ Meg Drive	£399.99
1040ST with 1 Meg Built in Drive + Mono Monitor	£799.99
1040ST as above with Colour Monitor	£999.99
SF314 1 Meg Disk Drive	£199.99
SF354 ½ Meg Disk Drive	£149.99
Philips & CM8533 Colour Monitor	£289.99
Monitor Cable	£19.95
Modem Cable	£19.95
Printer Cable	£19.95
LX80 Epson NLQ Printer	P.O.A.
Tractor Unit	£23.00
CII Sheet Feeder	£93.00
130XE 128K Computer	£129.95
CX11 Data Recorder	£34.95
1050 Disk Drive	£129.95
1029 Dot Matrix Printer	£119.99
Touch Tablet	£29.99
1020 Printer (Plotter 4 Col.)	£79.95
WS2000 Modem	P.O.A.
WS3000 Auto Ans/Dial	£295.99
Mouse Mats	P.O.A.
2000 Sheets Listing Paper	£18.95
RX/FX/MX Ribbons	£6.95
LX80 Ribbons	£4.95
ST System Stands	£29.99
3.5" Diskettes	each £3.99
5¼ Diskettes	each £1.99
3.5 Disk Box	£24.99
5¼ Disk Box	£24.99
RX/FX/MX Blue Red Brown Ribbon	£7.95
Voice Master	£61.95

ST SOFTWARE

ST ACCOUNTS CHIPSOFT ST	£149.99
Toolbox	£29.95
Forth	£49.95
Base	£99.95
All Infocom Adventures	P.O.A.
K Ram	£29.95
K Seka	£49.95
K Spread	£49.95
Laserbase	£99.95
Hex	£39.95
PC Intercomm (VT100 Terminal Emulator)	£129.95
The Final Word	£150.00
C.O.L.E. Object Editor	£34.95
Disk Doctor	£29.95
Maps & Legends/The Cartographer	£34.95
Degas	£34.95
Haba Merge	£39.95
Haba Dex	£59.95
Haba Hippo C	£74.95
Haba Writer	£74.95
Devpac	£49.95

NEW TITLES FROM SECS

Opera House/Pay Off	CASS	AT/C64	£4.99
QAI	CASS	AT/C64	£2.99
The Family Game	CASS	AT	£2.99
Opera House/QAI	DISK	AT/C64	£9.95
Font Constructor	DISK	AT	£9.99
Go Forth	DISK	AT	£24.99
The Family Game/ Question Constructor	DISK	AT	£9.95

8-BIT SOFTWARE

Boulder Dash II	C/D	£9.95/£14.95
Spy vs Spy II	C/D	£9.95/£14.95
King of the Ring	C/D	£9.95/£12.95
Zone X	C/D	£9.95/£12.95
H p Alley Ace	C/D	£9.95/£14.95
Kennedy Approach	C/D	£14.95/£17.95
Nato Commander	C/D	£9.95/£12.95
Solo Flight	C/D	£14.95
F15 Strike Eagle	C/D	£14.95/£17.95
Spy Hunter	C/D	£9.95/£14.95
Up 'n Down	C/D	£9.95/£14.95
Tapper	C/D	£9.95/£14.95
Ballblazer	C/D	£9.95/£14.95
Designers Pencil	Cart	£14.95
Eidolon	Disk	£14.95
Future Ball	C/D	£9.95/£14.95
Hacker	C/D	£9.95/£14.95
Ghostbusters	Disk	£14.95
Rescue on Fractalus	C/D	£9.95/£14.95
Pastfinder	Cart	£14.95
Pitfall II	Cass	£9.99
Space Shuttle	Cass	£9.99
American CC Road Race	C/D	£9.95/£14.95
Koronis Rift	Disk	£14.95
Cutthroats (Invisiclue)	D/B	£29.95/£6.95
Deadline (Invisiclue)	D/B	£22.95/£6.95
Enchanter (Invisiclue)	D/B	£39.95/£6.95
Hitchhikers Guide to the Galaxy (Invisiclue)	D/B	£27.95/£6.95
Infidel (Invisiclue)	D/B	£39.95/£6.95
Planetfall (Invisiclue)	D/B	£22.95/£6.95
Seastalker (Invisiclue)	D/B	£22.95/£6.95
Sorcerer (Invisiclue)	D/B	£39.95/£6.95
Spellbreaker (Invisiclue)	D/B	£39.95/Soon
Starcross (Invisiclue)	D/B	£29.95/£6.95
Suspect (Invisiclue)	D/B	£34.95/£6.95
Suspended (Invisiclue)	D/B	£39.95/£6.95
Wishbringer (Invisiclue)	D/B	£29.95/£6.95
Witness (Invisiclue)	D/B	£29.95/£6.95
Zork I (Invisiclue)	D/B	£22.95/£6.95
Zork II (Invisiclue)	D/B	£25.95/£6.95
Zork III (Invisiclue)	D/B	£29.95/£6.34
Atariwriter Plus	Disk	£59.95
Final Legacy	Cart	£19.95
Combat Chess	Disk	£29.95
Jupiter Mission 1999	Disk	£49.95
Market Forces	Disk	£21.95
Championship Lode Runner	Disk	£29.95
Karateka	Disk	£29.95
Lode Runner	Disk	£25.95
Printshop	Disk	£38.95
Printshop Graphics I	Disk	£21.95
Printshop Graphics II	Disk	£21.95
Printshop Graphics III	Disk	£21.95
Printshop Paper	Accs	£19.95
Mask of the Sun	Disk	£35.95
Alternate Reality	Disk	£39.95
Temple of Apshai Trilogy	Disk	£39.95
Top Dos Version 1.5	Disk	£29.95
Star League Baseball	C/D	£24.95
Starbowl Football	C/D	£24.95
Bank Street Music Writer	Disk	£39.95
Halley Project	Disk	£39.95
Goonies	C/D	£9.95/£14.95
Zorro	C/D	£9.95/£14.95
Zaxxon	Disk	£14.95
Pole Position	C/D	£9.95/£14.95
Bruce Lee	C/D	£14.95
Conan	Disk	£14.95
Mr Do	Cass	£9.95
Pacman	Cass	£9.95

514-516 ALUM ROCK ROAD
ALUM ROCK
BIRMINGHAM B8

HOTLINE
(021) 328 3585

PLEASE NOTE ALL ORDERS TAKEN WITH EITHER FULL PAYMENT OR DEPOSIT WILL NOT BE CLEARED UNTIL YOUR ORDER IS READY TO BE DESPATCHED

"Please send me your catalogue."

NAME

ADDRESS

TELEPHONE

MILES BETTER SOFTWARE

221 Cannock Road, Chadsmoor, Cannock,
Staffs WS11 2DD. Tel: (05435) 79099

US GOLD	**Cass.**	**Disc**
Beach Head		14.95
Blue Max	7.95	14.95
Blue Max 2001	7.95	14.95
Bounty Bob Strikes Back	9.95	
Bruce Lee	7.95	14.95
Conan		14.95
Dropzone	7.95	14.95
F15 Strike Eagle	10.95	14.95
Snow Chaser	9.95	
Goonies	9.95	14.95
Kennedy Approach	10.95	14.95
Nato Commander		14.95
Pole Position	9.95	14.95
Spy Hunter	9.95	14.95
Solo Flight	10.95	14.95
Strip Poker	7.95	14.95
Summer Games		14.95
Super Zaxxon	9.95	14.95
Tigers in the Snow		14.95
Up n Down	7.95	14.95
[illegible]		14.95
[illegible]	9.95	14.95
Knights of the Desert		14.95
Alternate Reality		14.95
Tapper	7.95	14.95
Exodus		14.95

BIG FIVE	**Rom**
Bounty Bob Strikes Back	25.95
Miner 2049	9.95

ENGLISH SOFTWARE	**Cass**	**Disc**
Chris Story	9.95	10.95
Colossus Chess	9.95	11.95
Mercenary	9.95	10.95
Smash Hits 1	4.95	10.95
Smash Hits 2	4.95	10.95
Smash Hits 3	4.95	10.95
Smash Hits 4	4.95	10.95

ACTIVISION	**Cass**	**Disc**
Ball Blazer	9.95	13.95
Koronis Rift		13.95
Eidolon		12.95
Rescue on Fractalus	9.95	13.95
Decathlon	9.95	
Cross Country Road Race	9.95	13.95
Hacker	9.95	12.95
Space Shuttle	9.95	
Designer Pencil (Rom)	9.95	
Hero (Rom)	10.95	
Pastfinder (Rom)	9.95	

ARIOLASOFT	**Cass**	**Disc**
Pinball Construction Set		11.95
Music Construction Set		11.95
Seven Cities of Gold		11.95
Realm of Impossibility		11.95
[illegible] Pack		20.95

DIGITAL INTEGRATION	**Cass.**	**Disc**
Fighter Pilot	9.95	10.95

NOVAGEN	**Cass.**	**Disc**
Encounter	7.95	11.95
Mercenary	9.95	10.95

LEVEL NINE	**Cass.**	**Disc**
Worm in Paradise	9.95	
[illegible]	9.95	
Red Moon	9.95	
Lords of Time	9.95	
Return to Eden		9.95
Emerald Isle		9.95

FIREBIRD	**Cass.**	**Disc**
Chimera	3.95	

ATARI	**Rom**
Star Raiders	9.95
Joust	9.95
Qix	9.95

	Rom
Ms Pacman	9.95
Defender	9.95
Robotron 2084	9.95

BRODERBUND	**Cass**	**Disc**
Karateka		24.95

SUBLOGIC	**Cass.**	**Disc**
Flight Simulator II		39.95

DATABYTE	**Cass.**	**Disc**
Boulderdash I	9.95	12.95
Spy V Spy II	9.95	12.95
Brush on Art Dept.		29.95

SSI	**Cass.**	**Disc**
Kampfgruppe		44.95
Carrier Force		44.95
Objective Kursk		29.95
Panzer Grenadier		29.95
Battalion Commander		29.95
Computer Quarterback		39.95
War in Russia		84.95
Colonial Conquest		29.95
Cosmic Balance II		24.95
Gemstone Warrior		29.95
Field of Fire		29.95
Six Gun Shootout		29.95
Questron		39.95

INFOCOM	**Cass.**	**Disc**
Hitchhikers Guide to the Galaxy		24.95
Seastalker		18.95
Deadline		18.95
Cutthroats		24.95
Wishbringer		20.95
Zork I		18.95
Zork II		22.95
Zork III		20.95
Planetfall		18.95
Starcross		20.95
Enchanter		24.95

ST SOFTWARE

Batteries Included	**Disc**
Degas	29.95

INFOCOM	**Disc**
Hitchhikers Guide to the Galaxy	24.95
Planetfall	18.95
Zork I	18.95
Deadline	18.95
Mind Forever Voyaging	24.95
Infidel	20.95
Cutthroats	20.95
Wishbringer	20.95

PSYGNOSIS	**Disc**
Brataccas	32.95

GST	**Disc**
GSTC Compiler	59.95
GST Macro Assembler	24.95

HARDWARE
1050 Disc Drive
Including DOS 2.5 + Miner 2049
£129.00 including P&P

354 3½" 500k Disc Drive for ST **£145.00**
XCII Cassette Unit **£34.00**

All prices are correct at time of going to press.
Access or Visa orders welcome.
Make sure Cheques or Postal Orders payable to

"MILES BETTER SOFTWARE"

Phone or write for comprehensive stock list for Atari and ST software + hardware.

NEW RANGE OF MUSIC COMPACT DISCS AVAILABLE. PHONE FOR DETAILS.

TYNESOFT

ONE OF THE MOST AGGRESSIVE SOFTWARE HOUSES

Urgently require Experienced ATARI Programmers for Conversion Work

FINISHED GAMES ALSO URGENTLY REQUIRED FOR ALL MACHINES. EXCELLENT RATES FOR THE RIGHT PERSON/PRODUCTS . . .

Contact COLIN COURTENAY **NOW** *on* **091-414 4611**

A colourful combination

JOHN WHITE demonstrates the way to brighten up your screen display by using Modes 12 and 13

AS the memory of Atari 8 bit computers (successively models 400, 800, 1200, 600XL, 800XL and 130XE) gets larger – it seems that the manual supplied with them gets smaller

The old 16k Atari 400 computer came with two thick manuals describing the use of the machine The latest 128k Atari 130XE has only a small instruction booklet which does little beyond revealing the permitted Basic key words

This is a pity because some powerful capabilities are hidden within these machines which are not referred to by any of the manuals nor by the beginners books supplied by other authors

The experienced Atari user will doubtless be aware that there are three well-documented text modes (in Basic Modes 0 1 and 2) and a further six graphics modes (Basic Modes 3 4 5 6 7 and 8) There are also three GTIA graphics modes (Basic Modes 9 10 and 11) which can be found in the later models

The trouble with the text modes which print characters on the screen is that the background colour remains the same for each printed character even though it is possible to alter the colour of the characters themselves

For example you can print the letter A on the screen in four different colours in text Modes 1 and 2 but the background remains the same for each Any attempt to change the background colour equally alters the background of all the different coloured characters

Suppose you want to make a chess board This requires black and white pieces to be placed on say blue and red background squares Clearly text Modes 1 and 2 are not suitable for this purpose

However a poorly documented solution exists to this problem The Antic graphics chip is responsible for all the graphics and text modes known in Basic but also permits a few interesting extra modes

These were only accessible in the early Atari computers by writing a custom-designed display list – a short machine code routine which called the necessary extra Antic modes Some of these extra options are now directly available to the Basic programmer who has a 600XL 800XL or 130XE computer

Text Modes 12 and 13 in Basic on the latter computers correspond to Antic Modes 4 and 5 respectively from the older Atari machines They permit text to be printed on to the screen in any combination of four colours per character with up to five colours available on one screen

Before going any further it is necessary to examine how the Ataris display characters on the screen The main difference between the graphics and text modes is that the former display only a single byte of data by POKEing it onto the screen whereas the latter takes the character code looks up the corresponding eight consecutive bytes from the character set and POKEs all eight of the data bytes one underneath another on the screen

A character therefore comprises eight bytes placed vertically on the screen Each consists of eight bits each of which may be set 1 which means that a colour is shown in that pixel or not set 0 meaning that the background colour is assumed

The letter A is the 33rd character in the Atari character set Figure I shows exactly how the eight data bytes for the letter A are held in memory

The head of the character set is indexed by memory location 224 Thus the first character in the set has its data bytes stored in memory locations 224*256 224*256+1 224*256+2 … 224*256+7

Since A is the 33rd character and each character has eight data bytes we must look for the data for letter A from positions 224*256 + 33*8 to 224*256 + 33*8 + 7

You can test this statement with program I The results which are printed out should agree with those displayed in Figure I

```
10 FOR I=0 TO 7
20 PRINT PEEK(224*256+33*8+I)
30 NEXT I
```

Program I

Now try Programs II and III watching the screen carefully Program II puts the letter A on the

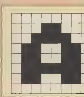


Figure I Data bytes for letter A

screen in text Mode 0 Program III develops and prints the same letter A in graphics Mode 8 by placing graphics data bytes taken from the character set for the letter A sequentially one underneath each previous byte

```
5 REM SCR holds the memory location of
 the top-left corner of the screen
10 GRAPHICS 0:POKE 752,1
20 SCR=PEEK(88)+256*PEEK(89)
30 POKE SCR,33
```

Program II

```
10 GRAPHICS 8
20 SCR=PEEK(88)+256*PEEK(89)
30 FOR I=0 TO 7
40 POKE SCR+40*I,PEEK(224*256+33*8+I)
50 FOR J=1 TO 200:NEXT J:REM DELAY
60 NEXT I
```

Program III

We have seen that the letter A can be poked to the screen with the code 33 On colour text screens (Modes 1 and 2) the sixth and seventh bits of code are combined to show the colour of the character

Since four combinations are available by changing two bits four colours can be permitted on the screen Thus repeatedly adding the value 64 to the original character code will change the colour up to four times Try Program IV and see

```
10 GRAPHICS 1
20 SCR=PEEK(88)+256*PEEK(89)
30 FOR I=0 TO 3
40 POKE SCR+I,33+64*I
50 NEXT I
```

Program IV

Binary		Decimal
00000000	=	0
00011000	=	24
00111100	=	60
01100110	=	102
01100110	=	102
01111110	=	126
01100110	=	102
00000000	=	0

Now return to Program II and change line 10 to read 10 GRAPHICS 12 Run the program What has happened to the character?

In Modes 12 and 13 the character data bytes are used differently to their role in Mode 0 although a full character of eight bytes is still displayed

Each different pair of bits in a data byte tells a separate colour register to colour the pixel described by the two bits Again there are four permutations of two bits – 00 01 10 and 11 – so four colours can be permitted in one character byte

Let's look at letter A again in the light of this information

00	00	00	00
00	01	10	00
00	11	11	00
01	10	01	10
01	10	01	10
01	11	11	10
01	10	01	10
00	00	00	00

Figure II Mode 12 character data bytes

Note that the character is now only four pixels wide whereas it was eight pixels wide in text Modes 0 1 and 2 If you have colouring pencils handy colour in Figure II with the default Atari colours thus

00 – black
01 – orange
10 – green
11 – dark blue

Compare the coloured picture with the screen character They should be similar although colour bleeding on the screen tends to blur the colours

Now try changing line 30 in Program II to 30 POKE SCR 33+128

One of the colours of the character on the screen has altered As was the case in text Modes 1 and 2 changing one of the top bits of the character code has affected a colour register although in text Modes 12 and 13 only the top bit can be altered

Table I illustrates the effect of the character code and the values of the data bytes on the colour registers used Use SETCOLOR N to alter the colours where N is the value of the colour register shown in the table

Bit Pair	Colour registers affected	
	Character code	code+128
00	4	4
01	0	0
10	1	1
11	2	3

Table I

The colour registers can be changed in the ordinary way from Basic with for example SETCOLOR 0 12 6 SETCOLOR 1 14 8 according to whim

The character set provided by Atari in ROM is designed for use with text Modes 0 1 and 2 and is rather useless in text Modes 12 and 13

However if the original character set is copied into RAM individual characters can be altered to give interesting pictures A machine code utility for copying the set into RAM is given in the Chess Board program at the end of this article

There is one important disadvantage with this method of displaying multi coloured graphic characters on the screen For each character byte which has been modified there is one less of the original character set to be displayed It is easy to consume part of the original alphabet stored in the character set so that only garbage will be printed out in the text window

It is possible to divide a single chess piece into four different characters which are then POKEd on to the screen in this order

A B
C D

The character data for a chess rook is shown in Figure III The rook is divided into four characters each of which has eight associated data bytes I have drawn the pieces in such a way that each byte is part of a twin pair of identical bytes This saves space in data statements in the Chess Board program but higher resolution could be achieved by making each byte of the pair different

The program places a chess board on the screen in five colours When you have finished with it alter the GRAPHICS 12 in line 590 to

→

AT LAST!

UNCLE JACK'S **"POWER WITHOUT THE PRICE"** PHILOSOPHY HAS BEEN APPLIED TO SOFTWARE.

AT LAST!

A SOFTWARE COMPANY THAT BRINGS THE PRODUCTS WE **NEED . . . . .**

COME TO THE **1ST ATARI COMPUTER SHOW** **STAND 31**
& SEE OUR RANGE

WORLD PREMIER
Phantom
of the
Opera
Stars in our new
ADVENTURE
CLASSIC
OPERA
HOUSE

BIGNOSE SOFTWARE

Meet Bignose
Luigi s boys
who wrote
the ATARI
smash hit
"THE PAY OFF"

COME
ON
DOWN
& bring the
family to play
THE FAMILY
GAME

ENTERTAINMENT,
EDUCATION, BUSINESS
AND CREATIVITY
IT'S ALL FROM

SECS

IT'S WHAT YOUR HARDWARE
HAS BEEN WAITING FOR!!!

FABULOUS PRIZES TO BE WON!

TRY YOUR HAND
AT SOME OF OUR
YET TO BE RELEASED
SOFTWARE

DEALERS CALL **(021) 328 3585** FOR A DEALER PACK

GRAPHICS 13 Text Mode 13 is much the same as Mode 12 but the board is stretched downwards to double its size

Using four characters to represent one chess piece exacts a heavy toll from the original character set There are six types of black pieces six of white pieces and one type of vacant square requiring 52 characters of the original 128 to be modified Try typing into the text window and you will find that most of the lower case characters are missing

The excellent Chess cartridge from Parker probably uses Mode 12 or Mode 13 for its magnificent multi-colour graphics However in accordance with the high penalty paid in the character set for this approach Parker Chess displays no ordinary text on the screen at all – all moves by the player are entered with a joystick and cursor

Finally a warning – save the Chess Board program to cassette or disc before running it for the first time

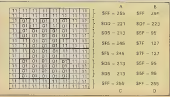


Figure III Data bytes for a chess rook

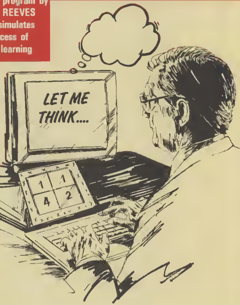
```
10 REM CHESS BOARD (ANTIC MODE 4)
20 DIM E$(37),A$(65)
30 REM ** Lines 80 - 160 use a machine
 code routine to transfer 4 (G) pages
40 REM ** of the character set and cop
y it into RAM 4 pages below the existi
ng set
50 REM ** The top of free memory is mo
ved down 4 pages to protect the new
60 REM ** Character Set, and a Graphic
s call is made to move the screen
70 REM ** display to the new position.
80 F=(PEEK(106)-4)*256:G=4
90 POKE 106,PEEK(106)-4
100 GRAPHICS 0
110 FOR I=1 TO 36
120 READ D:POKE ADR(E$)+I,D
130 NEXT I
140 X=USR(ADR(E$)+1,224*256,F,G)
150 DATA 104,104,133,205,104,133,204,1
04,133,207,104,133,206,104,104,133,208
,166,208,160,0
160 DATA 177,204,145,206,200,208,249,2
30,205,230,207,202,208,240,96
170 REM ** The following data statemen
ts store the character byte data
180 REM ** for the chess pieces as fol
lows
190 REM **  VALUE     PIECE TYPE
200 REM **    0       Black square
210 REM **    1       Black pawn
220 REM **    2       Black knight
230 REM **    3       Black bishop
240 REM **    4       Black rook
250 REM **    5       Black queen
260 REM **    6       Black king
270 REM **    7       White pawn
280 REM **    8       White knight
290 REM **    9       White bishop
300 REM **   10       White rook
310 REM **   11       White queen
320 REM **   12       White king
340 DATA 255,255,255,255,255,255,255,2
55,255,255,255,255,255,255,255,255
350 DATA 255,255,255,252,245,255,255,1
27,245,253,213,255,127,255,95,255
360 DATA 255,255,246,213,255,255,127,1
27,253,245,213,255,127,127,95,255
370 DATA 255,253,247,221,255,255,127,2
23,215,245,213,255,95,127,95,255
380 DATA 255,221,213,245,255,223,95,12
7,245,213,213,255,127,95,95,255
390 DATA 255,221,207,252,255,221,127,2
55,215,213,213,255,95,95,95,255
400 DATA 255,253,245,253,255,255,127,2
55,245,213,213,255,127,95,95,255
410 DATA 255,255,254,250,255,255,255,1
91,250,234,234,255,191,255,175,255
420 DATA 255,234,250,234,255,255,191,1
91,254,250,234,255,191,191,175,255
430 DATA 255,234,251,239,255,255,191,2
39,239,250,234,255,175,191,175,255
440 DATA 255,238,234,250,255,239,175,1
91,250,234,234,255,191,175,175,255
450 DATA 255,238,251,234,255,255,191,2
55,235,234,234,255,175,175,175,255
460 DATA 255,254,250,234,255,255,191,2
55,250,234,234,255,191,175,175,255
470 REM ** The following lines poke th
e new character data into the
480 REM ** new Character Set, using th
e area of the Set reserved
490 REM ** for lower-case characters
500 FOR I=0 TO 414 STEP 2
510 READ A:POKE F+I+512,A:POKE F+I+513
,A:NEXT I
520 REM ** The following lines store t
he chess board in string A$, using
530 REM ** the same values for pieces
shown for the character set data
540 DATA 4,2,3,5,6,3,2,4,1,1,1,1,1,1,1
,1,0,8,0,8,0,8,0,8,8,0,8,0,8,0,8,0
550 DATA 0,8,0,8,0,8,0,8,8,0,8,0,8,0,8
,0,7,7,7,7,7,7,7,7,10,8,9,11,12,9,8,10
560 RESTORE 540
570 FOR I=1 TO 64:READ A:POKE ADR(A$)+
I,A:NEXT I
590 GRAPHICS 12:REM ANTIC MODE 4
600 SETCOLOR 0,0,10:SETCOLOR 1,0,12:SET
COLOR 2,3,6:SETCOLOR 3,0,0:SETCOLOR 4,
13,2
610 POKE 756,F/256:REM Switch on new c
haracter set
620 SCR=PEEK(88)+PEEK(89)*256:REM Addr
ess of top left corner of screen
630 FOR K=1 TO 64:REM for the 64 squar
es of the board
640 K1=4*PEEK(ADR(A$)+K):J=2*INT((K-1)
/8):I=2*(K-4*J)
650 L=64:REM L points to 1st of the ch
ess characters (where lower case used
to be)
660 IF INT((I+J)/4)<>(I+J)/4 THEN L=L+
128:REM Change background colour for e
very   other square
670 K1=K1+L
680 I=I+10:J=J+2:REM Horizontal and ve
rtical positions
690 POKE SCR+I+40*J,K1:REM Display the
 four parts of the piece
700 POKE SCR+(I+1)+40*J,K1+1
710 POKE SCR+I+(J+1)*40,K1+2
720 POKE SCR+(I+1)+(J+1)*40,K1+3
730 NEXT K
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	5084	20	2546	30	17327
40	21177	50	18602	60	17707
70	9556	80	2818	90	3457
100	2829	110	3299	120	4262
130	1346	140	4855	150	12020
160	9590	170	10223	180	10679
190	4900	200	5514	210	4835
220	3474	230	3472	240	4035
250	5584	260	8081	270	4991
280	5580	290	5078	300	8900
310	5457	320	4984	330	2831
340	16527	350	10251	360	10222
370	18116	380	9244	390	9979
400	18109	410	10497	420	10401
430	10400	440	10581	450	10503
460	18402	470	17990	480	16320
490	8721	500	3797	510	7987
520	17894	530	12564	540	9803
550	18604	560	2146	570	8184
580	17097	590	5571	600	14629
610	10711	620	16136	630	11373
640	9839	650	20431	660	21202
670	1217	680	32046	690	14168
700	4219	710	4274	720	4673
730	1109				

Give your computer an opportunity to think for itself with this game playing program by DAVID REEVES which simulates the process of human learning

MANC



UNA

THIS game-playing program is basically an exercise in artificial intelligence Unlike most game-playing programs however, this one is different in that the computer actually learns as it goes along.

The program partly simulates human learning as the computer remembers positions which led it to lose and then given the opportunity plays these back against its opponent

The game is a simplified version of an Arabic game called Mancuna I chose this game for the exercise because it is fairly challenging while not being too complex and it may also be new to many people

This simple version is played by two players using eight counters on a 2 × 2 square board The game begins with two counters on each square and the players face each other across the board

Taking turns each player picks up the counters from one square on his/her side of the board and moves them anticlockwise round the board putting one counter on to each square in turn until they are exhausted

Thus if one player picks up three counters from the bottom left square he must put one counter on the bottom right one on the top right and the last one on the top left leaving no counters on the original square The winner is the first player to have all eight counters on his/her side of the board

The program allows you to play against the computer On your turn move the joystick left or right to choose the square you want to move from and then press the fire button

At the start the computer is totally naive knowing only the rules of the game Each time it loses the computer remembers the position which led it into a losing sequence of moves In future it will avoid getting into this position itself but will put you into it if it can

Humans also learn like this – but unlike a human the computer learns nothing from winning nor can it formulate general rules of strategy to guide its play

Against this however the computer does have the advantage that it never forgets positions which it knows must lead to a loss or those which must lead to a win It learns rapidly from its mistakes

After five losses it is quite a fair player and after 10 it can be difficult to beat Try playing it the first one to 10 wins, and see who learns quickest

The program works on the principle of giving a code of 1 to positions which lead to losses and 2 to those that lead to wins Initially all positions have a code of 0

Whenever it loses the computer recalls the last position it created which had an unknown outcome that is coded 0 That position is then given a code of 1 so that the computer knows not to create it again

Next all possible positions from which that position can be created are computed If it is found that all moves made from one of these positions lead to losses the position receives a code of 2 so that given the opportunity the computer will create the position, knowing that it leads to a certain win

In this way as the number of its losses increases the computer identifies moves leading to losing sequences earlier and earlier and learns longer and longer winning sequences If played against long enough it becomes a perfect player

→

PROGRAM STRUCTURE

10-60	Initialise variables and screen
80-240	Player s move
280-300	Get ready for computer move
310-320	Compute destinations for both possible moves by computer
330-460	Computer s move Random choice unless one move leads to a certain win or a certain loss
470-490	Store position as lastunpos if not coded as win or loss
500-700	If computer loses code lastunpos as certain loss Then compute positions which lead to lastunpos For each of these determine both possible destinations and if both lead to losses the position is a certain win – for the player Compute the corresponding position for the computer (100×C+10×D+A) and code as a win
710-790	End of game and initialise for next game
800-890	Subroutine for coding winning positions
900-990	Subroutine for setting up screen
1000-1050	Subroutine for moving counters

MAJOR VARIABLES

SQUARE	The squares are called 1 2 3 and 4 anticlockwise from bottom left
A, B, C, D	Number of counters on squares 1 2 3 4 respectively
CODE(800)	Holds status codes for each position 1=losing position 2=winning position 0=unknown Positions are identified by computing 100×A+10×B+C
DES(2)	The two possible positions which can arise from the next move
DES1, DES2	Current status codes for DES(1) and DES(2)
LASTUNPOS	Last position created by computer with an unknown outcome

BITS & BYTES COMPUTERS

BITS & BYTES COMPUTERS
Old Swan Shopping Arcade,
Prescot Road, Old Swan, Liverpool 13
Tel: 051-259 5268

BITS & BYTES ATARI ONLY
Unit 7 Old Swan Shopping Arcade,
Swan Lane/Prescot Road, Old Swan, Liverpool 13
Tel: 051 259 5268

BITS & BYTES COMPUTERS
31 Bold Street, City Centre,
Liverpool 1
Tel: 051 708 4630

Join the Bits & Bytes Computer Discount Club for the cheapest prices plus FREE gifts! Only £2.50 for Life Membership. Special Offer! FREE gifts if you join before April 30th 1986.

FREE GAMES! Atari 2600 Video Games Spend £30 choose a game to the value of £5 absolutely FREE

HOT LINE! 051 264 7382

Look out for Mad Offers every month

DISKS	Club Price	CASSETTES	Club Price	ROMs	Club Price
Eidolon	12.70	Rescue on Fractalus	8.45	[illegible] 2049er	8.45
Rescue on Fractalus	12.70	Gt. American Road Race	8.45	Quest for Tires	8.45
Electraglide	10.85	Electra Glide	7.45	Star Raiders	7.45
[illegible]	10.85	Colossus Chess	8.45	Oil's Well	6.45
Realm of Impossibility	10.85	Colourspace	7.45	Centipede	8.45
M.U.L.E.	12.70	Zone X	8.45	Pacman	8.45
Pinball Construction	12.70	[illegible]	8.45	Krazy Kopter	4.50
Jump Jet	12.70	Jump Jet	8.45	Mountain King	3.95
Goonies	10.85	Mercenary	8.45	[illegible]	3.95
Tapper	10.85	Goonies	8.45	[illegible]	8.45
Spy Vs Spy II	12.70	Bounty Bob	6.45	Kickback	8.45
Blue Max 2001	12.70	Theatre Europe	6.45	Krazy Shootout	4.50
Summer Games	12.70	Mordons Quest	6.88		
Mercenary	10.85	Worm in Paradise	8.45	**2600 VCS Video Games**	
Boulderdash	12.70	Snowball	8.45	Pole Position	12.95
Gt. American Road Race	12.70	Chimera	3.70	Moon Patrol	12.95
Koronis Rift	12.70	Ballblazer	8.45	Donkey Kong	8.95
Smash Hits 1 2 3 & 4	10.85	Hacker	8.45	Qbert	8.95
Colossus Chess	10.85	Smash Hits 1 2 3 & 4	8.45	Astérix	8.95
Axis Assassin	10.85	[illegible]	8.45	Ms Pacman	8.95
Fighter Pilot	10.85	King of the Ring	8.45	[illegible]	7.95
Nato Commander	10.85	Fighter Pilot	8.45	[illegible]	8.95
Kennedy Approach	12.70	Boulderdash	8.45	Smurf	8.95
Spy Hunter	12.70	Zorro	8.45	Reactor	6.00
F-15 Strike Eagle	12.70	Strip Poker	8.45	Star Re Hero (Free T Pad)	6.95
Strip Poker	12.70	Kennedy Approach	12.70	Yars Revenge	4.95
Whirlinurd	12.70	Chuckie Egg	5.95	Super Breakout (Paddles)	3.95
Beach Head	12.70	Nato Commander	8.45	Outlaw	3.95
Hacker	12.70	[illegible]	8.45	Breakout	3.95
Mr Robot	12.70	Spy Vs Spy II	8.45	Warlords	3.95

FREE GIFT VOUCHER! Atari 400, 800 spend £30 and you will receive a £2 gift voucher towards next purchase.

SEND S.A.E. FOR OUR CATALOGUE

Also in stock Colecovision & Intellivision Video Games from £3.99

LATEST RELEASES Soul of a Robot Steve Davis Snooker Castle Assault, Diamond Mine I Nightmare More Ian Botham's Test Match Screw Ball Darts Boulderdash II Sky Fox Super Huey Koronis Jet Set Willey

Send Cheques/P.O's to: Prices include VAT & Postage. Add £1.00 per item for overseas orders

BITS & BYTES COMPUTERS (Ltd) Mail Order Dept.
40-42 Balmoral Road, Fairfield, Liverpool L6 8NF Tel: 051-264 7382

Haystack Peripherals Atari Software

8 Midgrave, Delph, Oldham OL3 5EJ Tel: 04677 5229

Send SAE for our current price list. (Please mark envelope "Atari")

THIS MONTH'S EXTRA SPECIAL OFFERS!

CREATIVE SPARKS	Case
[illegible]	4.90
Desmond's Dungeon	4.90
Special Delivery	4.90
Double Pack	9.80
[illegible] Pack	12.60

US GOLD	Case
Caverns of Khafka	4.90
Slinky	4.90
Double Pack	8.60

DISC US GOLD	Disc
[illegible]	6.90
[illegible]	6.40
Spider Invasion	8.40
Double Pack	12.40
Triple Pack	18.00

US GOLD	Case
Whirlinurd	5.90

	Case	Disc
ACTIVISION		
Ball Blazer	8.40	12.80
Decathlon	8.40	
Eidolon	8.40*	12.80
Gt. Am. Road Race	8.40	12.80
Ghostbusters		12.80
Hacker	8.40	12.80
Koronis Rift	8.40*	12.60
Mindshadow*		12.80
Pitfall II	8.40	
Rescue on Fractalus	8.40	12.80
Space Shuttle	8.40	
ANIROG		
Jump Jet	8.40	9.80
ARIOLASOFT		
Archon	8.40	12.80
Archon II*	8.40*	10.60*
Axis Assassin		8.40
D Bug	8.90	
Golf Cons Set*	8.90*	12.80*
Hard Hat Mack	8.40	10.80
MULE	8.40	12.80
Murder on Zinderneuf		12.80
Music Cons Set		11.80
One on One	8.40	10.60
Pinball Cons. Set		11.80
Paintbrush*	15.40	*15.60
Realm of Impossibility	*8.40	10.80
Seven Cities of Gold		11.80
Think*	7.80	
BEYOND		
Spy vs Spy	9.40	
CDS		
Steve Davis Snooker	8.40	10.30
DATABYTE		
Boulderdash II	8.40	12.60
Spy vs Spy II	8.40	12.80
Mr Robot	8.40	12.40
Graphic Arts Dept		28.40
DATAMOST		
Mr Robot		12.80
DIGITAL INTEGRATION		
Fighter Pilot	9.40	10.80
ELECTRIC DREAMS		
Spy v Demise	9.40	10.30
ELITE		
Airwolf	8.40	
ENGLISH		
Colossus Chess	8.40	10.80
Elektraglide	7.80	10.80
Miner 2049er	8.40	10.80
Smash Hits 1	8.40	10.80
Smash Hits 2	8.40	10.80
Smash Hits 3	8.40	10.80
Smash Hits 4	8.40	10.80
GREMLIN GRAPHICS		
King of the Ring	8.40	11.40
Zone X	8.40	11.40
INFOCOM		
Deadline		17.80
Hitchhikers Guide		21.80
Planetfall		17.80
Seastalker		17.80
Zork I		17.80
LEVEL 9		
Adventure Quest	8.40	
Colossal Adv	8.40	
Dungeon Adv	8.40	
Emerald Isle	6.30	
Lords of Time	8.40	
Red Moon	6.90	
Return to Eden	8.60	
Snowball	8.40	
Worm in Paradise	8.40	
LLAMASOFT		
Colourspace	8.40	
MELBOURNE HOUSE		
Mordon's Quest	5.90	
William Wobbler*	8.90	
MIRRORSOFT		
Boulderdash	8.40	
MOSAIC		
Secret Diary/Adrian Mole	8.40	
NOVAGEN		
Encounter	8.40	10.60
Mercenary	8.40	10.60
PSS		
Theatre Europe	8.40	
PRECISION		
Superscript		67.90
SIERRA-ON-LINE		
Dark Crystal		25.90
Mission Asteroid		18.90
Ultima I		18.90
Ultima II		25.90
Ulysses		25.90
Wizard + Princess		19.90
STRATEGIC SIMULATIONS		
Battalion Commander		33.90
Breakthrough/Ardennes		44.90
Broadsides		28.90
Colonial Conquest		32.90
Eagles		32.90
Field of Fire		33.90
Fortress		33.90
Galactic Adventures		55.40
Panzer Grenadier		33.90
Questron		45.90
Rails West		28.40
Reforger 88		33.90
Six Gun Shootout		33.90
50 Mission Crush		33.90
SUBLOGIC		
Flight Simulator II		39.50
US GOLD		
Alternate Reality The City*		*17.90
Aztec Challenge	7.90	
Beach Head		11.90
Blue Max	7.80	11.90
Blue Max 2001	7.90	11.90
Bounty Bob	7.80	
Bruce Lee	11.90	11.90
Conan		11.90
Crusade in Europe*	17.40	17.90
Dig Dug	11.80	
[illegible]	8.40	11.90
Drop Zone	7.80	11.90
Forbidden Forest	7.90	
Fort Apocalypse	7.80	11.90
F15 Strike Eagle	11.80	11.80
Ghost Chaser	8.40	
Goonies	7.80	11.80
Kennedy Approach	11.80	14.90
Knights of the Desert*	*8.40	*12.90
Lucifer's Realm		12.80
Mig Alley Ace	7.80	11.80
Mr Do	11.90	
Nato Commander	7.90	10.60
Pacman (cart)	8.40	
Pole Position	7.90	11.90
Quasimodo	7.90	11.90
Quest Probe*		*12.90
Snokie	7.90	
Solo Flight	11.90	11.80
Spitfire Ace	7.90	10.30
Spy Hunter	7.90	11.90
Strip Poker	7.90	11.90
Summer Games		11.90
Super Zaxxon	7.90	11.90
Tapper	7.90	11.90
Tapper in the Snow		11.80
Up N Down	7.80	11.90
Zaxxon	11.90	
Zorro	7.90	11.90

C16 COMPUTER CASSETTES (Box of Ten) £4.80

* Please ring to confirm availability

Prices include VAT and Carriage

Callers by Appointment only

Order by Access on 04677 5229 our 24 hour Hotline

Cheques (Please write card No. on reverse) or P.O.'s to **HAYSTACK PERIPHERALS**
Please state ATARI when ordering [illegible]

```
10 GRAPHICS 18
20 DIM CODE(888),DES(2)
30 REM ** INITIAL VALUES **
40 A=1:B=7:C=2:D=2:GE=1:YOU=0:GO=2
50 FOR I=0 TO 888:CODE(I)=0:NEXT I
60 GOSUB 900
70 REM ** PLAYERS GO **
80 SQUARE=0
90 POSITION 12,1:PRINT #6;"your go":POSITION 12,2:PRINT #6;"       ":POSITION 12,4:PRINT #6;"    "
100 POSITION 2,1:PRINT #6;"[illegible]"
110 Z=STICK(0)
120 POKE 77,0
130 IF Z=11 THEN SQUARE=1:POSITION 1,9:PRINT #6;"xxx[illegible]"
140 IF Z=7 THEN SQUARE=2:POSITION 2,9:PRINT #6;"[illegible]xxx"
150 IF SQUARE=0 THEN 110
160 IF STRIG(0)=1 THEN 110
170 IF SQUARE=1 AND A=0 THEN POSITION 12,2:PRINT #6;"ha! ha! ":GOTO 90
180 IF SQUARE=2 AND B=6 THEN POSITION 12,2:PRINT #6;"he! he! ":GOTO 90
210 IF SQUARE=1 THEN B=A:B=6:POSITION 3,7:PRINT #6;A
220 IF SQUARE=2 THEN B=6:B=8:POSITION 7,7:PRINT #6;B
230 GOSUB 1000
240 IF A=0 AND B=0 THEN POSITION 12,1:PRINT #6;" I win!":ME=ME+1:GOTO 710
250 REM ** COMPUTERS GO **
260 POSITION 12,2:PRINT #6;"     "
270 POSITION 12,1:PRINT #6;" my go ":POSITION 12,3:PRINT #6;"LET ME":POSITION 12,4:PRINT #6;"SEE . ."
280 POSITION 12,2:PRINT #6;"     "
290 POSITION 2,9:PRINT #6;"[illegible]"
300 FOR W=1 TO 800:NEXT W
310 DES(1)=100*(B+INT((C+2)/4))+10*(B+INT((A+C)/4))+INT(C/4)
320 DES(2)=100*(A+INT((2*D)/4))+(C+INT((A+D)/4))
330 DES1=CODE(DES(1)):DES2=CODE(DES(2))
340 IF C=0 THEN SQUARE=4:DES1=1:GOTO 410
350 IF D=0 THEN SQUARE=3:DES2=1:GOTO 410
360 IF DES1=2 THEN SQUARE=3
370 IF DES2=2 THEN SQUARE=4
380 IF DES1=1 THEN SQUARE=4
390 IF DES2=1 THEN SQUARE=3
400 IF DES1=0 AND DES2=0 THEN SQUARE=3+INT(2*RND(0))
410 IF SQUARE=3 THEN POSITION 2,1:PRINT #6;"[illegible]xxx"
420 IF SQUARE=4 THEN POSITION 2,1:PRINT #6;"xxx[illegible]"
430 FOR W=1 TO 100:NEXT W
440 IF SQUARE=3 THEN D=C:C=0:POSITION 7,3:PRINT #6;C
450 IF SQUARE=4 THEN C=D:D=0:POSITION 3,3:PRINT #6;D
460 GOSUB 1000
470 POS=100*A+10*B+C:IF CODE(POS)<>0 THEN 80
480 LASTONPOS=POS
490 A1=A:B1=B:C1=C:D1=D
500 IF C<>0 OR D<>0 THEN 80
510 POSITION 12,1:PRINT #6;"you win":YOU=YOU+1
520 CODE(LASTONPOS)=1
530 IF C1<>0 THEN 570
540 C=1:D=D1-1:A=A1:B=B1:GOSUB 800
550 C=2:D=D1-1:A=A1-1:B=B1:GOSUB 800
560 C=3:D=D1-1:A=A1-1:B=B1-1:GOSUB 800
570 IF C1<>1 THEN 620
580 C=4:D=D1-1:A=A1-1:B=B1-1:GOSUB 800
590 C=5:D=D1-1:A=A1-1:B=B1-1:GOSUB 800
600 C=6:D=D1-2:A=A1-2:B=B1-1:GOSUB 800
610 C=7:D=D1-2:A=A1-2:B=B1-2:GOSUB 800
620 IF D1<>0 THEN 660
630 D=1:A=A1-1:B=B1:C=C1:GOSUB 800
640 D=2:A=A1-1:B=B1-1:C=C1:GOSUB 800
650 D=3:A=A1-1:B=B1-1:C=C1-1:GOSUB 800
660 IF D1<>1 THEN 710
670 D=4:A=A1-1:B=B1-1:C=C1-1:GOSUB 800
680 D=5:A=A1-2:B=B1-1:C=C1-1:GOSUB 800
690 D=6:A=A1-2:B=B1-2:C=C1-1:GOSUB 800
700 D=7:A=A1-2:B=B1-2:C=C1-2:GOSUB 800
710 REM ** END OF GAME **
720 FOR W=10 TO 36:SOUND 0,40*RND(0),10,100/W:SOUND 1,20*RND(0),10,100/W:NEXT W:SOUND 0,0,0,0:SOUND 1,0,0,0
730 POSITION 12,10:PRINT #6;ME:POSITION 16,10:PRINT #6;YOU
740 POSITION 12,3:PRINT #6;" PRESS ":POSITION 12,4:PRINT #6;" FIRE  "
750 IF STRIG(0)=1 THEN 750
760 A=2:B=2:C=2:D=2
770 GOSUB 900
780 GO=1-GO:IF GO=1 THEN 80
790 GOTO 260
800 REM ** CODE [illegible] POSITIONS **
810 IF A<0 OR B<0 OR C<0 OR D<0 THEN 890
820 DES(1)=100*(A+INT((C+2)/4))+10*(B+INT((C+1)/4))+INT(C/4)
840 DES(2)=100*(A+INT((D+3)/4))+10*(B+INT((D+2)/4))+(C+INT((D+1)/4))
850 DES1=CODE(DES(1)):DES2=CODE(DES(2))
860 IF C=0 THEN DES1=1
870 IF D=0 THEN DES2=1
880 IF DES1=1 AND DES2=1 THEN POS=100*A+10*B+C:CODE(POS)=2
890 RETURN
900 REM ** SET UP SCREEN **
910 POSITION 4,0:PRINT #6;"[illegible]":POSITION 4,10:PRINT #6;"[illegible]"
920 POSITION 12,10:PRINT #6;ME:POSITION 16,10:PRINT #6;YOU
930 POSITION 1,1:PRINT #6;"[illegible]":POSITION 1,9:PRINT #6;"[illegible]"
940 FOR I=2 TO 8:POSITION 1,I:PRINT #6;"[illegible]":NEXT I
950 POSITION 1,5:PRINT #6;"[illegible]"
960 POSITION 13,0:PRINT #6;"[illegible]"
970 POSITION 12,9:PRINT #6;"[illegible]"
980 POSITION 7,3:PRINT #6;C:POSITION 7,7:PRINT #6;B:POSITION 3,7:PRINT #6;A:POSITION 3,3:PRINT #6;D
990 RETURN
1000 REM ** MOVE COUNTERS **
1010 SQUARE=SQUARE+1:IF SQUARE>4 THEN SQUARE=1
1020 FOR W=1 TO 70:NEXT W:SOUND 0,80,10,9:FOR W=1 TO 10:NEXT W:SOUND 0,0,0,0
1030 ON SQUARE GOSUB 1060,1070,1080,1090
1040 N=N-1:IF N<1 THEN RETURN
1050 GOTO 1010
1060 A=A+1:POSITION 3,7:PRINT #6;A:RETURN
1070 B=B+1:POSITION 7,7:PRINT #6;B:RETURN
1080 C=C+1:POSITION 7,3:PRINT #6;C:RETURN
1090 D=D+1:POSITION 3,3:PRINT #6;D:RETURN
```

Get it right!

LINE	CHKSUM	LINE	CHKSUM	LINE	CHKSUM
10	2182	20	3868	30	4712
40	6971	50	6737	60	1901
70	3777	80	1781	90	17607
100	5000	110	2020	120	1797
130	12431	140	11241	150	2005
160	3749	170	12391	180	12640
210	9364	220	9378	230	1915
240	13241	250	4190	260	5379
270	10877	280	8379	290	5024
300	3931	310	8705	320	10121
330	8425	340	6685	350	6890
360	4527	370	4524	380	8526
390	4525	400	8922	410	11746
420	11460	430	1912	440	9175
450	9202	460	1925	470	7625
480	3122	490	1612	500	4101
510	8719	520	3081	530	2779
540	5450	550	8970	560	8124
570	2757	580	8110	590	8133
600	6140	610	8149	620	2770
630	5456	640	5501	650	8125
660	2771	670	6113	680	8138
690	6145	700	6184	710	1662
720	17844	730	10782	740	17811
750	3763	760	2782	770	1901
780	4307	790	1620	800	8492
810	8144	820	9069	840	10815
850	6429	860	7250	870	3305
880	9751	890	1650	900	4473
910	12551	920	10782	930	20528
940	10109	950	10159	960	8208
970	8620	980	10487	990	1430
1000	4259	1010	8284	1020	17838
1030	6300	1040	4845	1050	3892
1060	7442	1070	7461	1080	7856
1090	7459				

Tired of typing?

Take advantage of our finger-saving offer on Page 44.

Your disc data on tap

. . . with the aid of this utility by DOUGLAS EWAN

THOSE of us who started with DOS 3 and have subsequently changed to the new DOS 2.5 will at some time wish to have a printout of files contained on a disc.

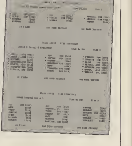
While this was possible with DOS 3 the option seems to be omitted on the newer operating system. You can however get a printout of disc files with Atari Writer but like DOS 3 this presents you with a not-too-neat three inch strip a bit off if you have an 80 column printer.

This disc index printout utility resolves these problems and allows you to neatly catalogue your disc directories on standard A4 paper. In addition it allows the directory to be named, disc numbered and side identified. The program also summarises the number of files, the used sectors and the free sectors.

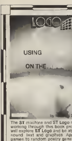
The program was written on my 130XE but works fine on an 800XL. It was designed for the Atari 1027 printer but works with an Epson FX-80 and should do so quite happily on any other 80 column printer.

As the layout of the directory is dependent on the number of blank spaces in the PRINT statements I've included some REM statements to help get it right.

They refer to the line immediately following – for example the statement in line 179 refers to the layout of line 180. None of the REMs are necessary and you can omit those lines if you want to save yourself some typing.



```
10 REM *** DISK INDEX UTILITY ***
20 REM ***   by Douglas Ewan  ***
30 GOSUB 400
40 POKE 82,0:POKE 83,39:POKE 752,1
50 DIM A$(40),B$(3),D$(1),R$(40),S$(1)
,N$(4),X$(4):Y=10:GOTO 170
60 GOSUB 400:PRINT "Reference ";:R$=""
 INPUT R$
70 Y=15:N=LEN(R$):POSITION 20-(N/2),5:
PRINT R$
80 GOSUB 400:PRINT "Disk No   ";:INPUT
 B$
90 N=LEN(B$):POSITION 15-(N/2),7:PRINT
 ;"Disk No- ";B$
100 GOSUB 400:PRINT "Side A/B  ";:INPU
T S$
110 POSITION 17,9:PRINT ;"Side ";S$
120 GOSUB 400:PRINT "NEXT (Y)es "; INP
UT R$:IF B$="Y" THEN Y=0:GOTO 50
130 GOSUB 400
139 REM 40 SPACES BETWEEN QUOTES
140 IF LEN(R$)<40 THEN R$(LEN(R$)+1,40
)="
     "
150 IF LEN(B$)<3 THEN B$(LEN(B$)+1,3)=
"  "
160 TRAP 300:OPEN #8,8,0,"P:":TRAP 310
:OPEN #1,6,0,"D:*.*":TRAP 310
169 REM 26 SPACES BEFORE ATARI
170 PRINT #8,"
  ATARI 130XE   DISK DIRECTORY":PRINT
#8:N=0:S=0
179 REM 8 SPACES BETWEEN QUOTES, 6 SPA
CES BEFORE SIDE
180 PRINT #8,"        ";R$;" Disk No "
,B$;"      Side ";S$:PRINT #8:PRINT #8
:GOTO 220
200 FOR I=3 TO 13:IF A$(I,I)=" " THEN
A$(I,I)="."
210 NEXT I:RETURN
220 INPUT #1;A$
230 IF A$(5,8)="FREE" THEN GOTO 290
240 GOSUB 200
250 PRINT #8,A$(1,10);".";A$(11,13);"
(";A$(15,17);")";
259 REM 9 SPACES BETWEEN QUOTES
260 IF INT(N/3)<N/3 THEN PRINT #8;"
       ";
270 IF INT(N/3)=N/3 THEN PRINT #8
280 GOTO 220
290 R$=STR$(S):N=LEN(R$):B$="    ":B$(
5-N,4)=R$
299 REM 8 SPACES BETWEEN QUOTES
300 PRINT #8:PRINT #8:PRINT #8;"
  ",N;" FILES";
```



ST LOGO

The complete manual for your logo programming

The **ST** machine and **ST Logo** make learning **Logo** fun By working through this book project by project the reader will explore **ST Logo** and be able to write programs using sound text and graphics Applications from interactive games to random poetry generation are developed stage by stage This course will be of interest to a very wide range of readers from the young novice to the teaching professional
Step into **Logo** and experience the exciting microworlds and sound and colour provided by **ST Logo** **£8.95**

1
ATARI
2
ATARI
MAKING BASIC WORK

THE YOUNGER SET

This series is aimed at 9 years and upwards.

Unit 1 **FIRST STEPS IN BASIC**
Starting with the first things every programmer needs to know you will learn to issue commands to the computer as well as writing and running programs By the end of the unit you'll be able to make you computer perform useful and interesting tasks

Unit 2 **EXPLORING BASIC**
This unit teaches you the most important concepts of BASIC numeric variables string variables FOR NEXT and IF THEN statements and much more You'll create a digital computer clock interesting graphics programs and a Zap the Baddies video game

Unit 3 **MAKING BASIC WORK**
This unit teaches you how to use the POKE command for graphics and games You'll find out about creating interesting sounds You'll also learn much more BASIC including READ DATA GOSUB RETURN and Arrays By the end of the unit you'll have considerable programming skills

£2.95 each

GLENTOP
PUBLISHERS LIMITED

STANDFAST HOUSE BATH PLACE HIGH STREET BARNET
HERTS EN5 5XE TELEPHONE 01 441 4130 TELEX 22828

WANTED
YOUR SOFTWARE

WE ARE EVALUATING SOFTWARE NOW FOR POSSIBLE INCLUSION IN OUR PRODUCT RANGE TO BE PUBLISHED AND DISTRIBUTED WORLDWIDE

IF YOU HAVE SOFTWARE AVAILABLE NOW ON ANY OF THE MACHINES LISTED BELOW, WE'D LIKE TO HEAR FROM YOU

ATARI (ANY), BBC-B, COMMODORE 64/128/AMICA,
SINCLAIR SPECTRUM, AMSTRAD (ANY),
IBM PC, APPLE II/MAC

WE'RE CONSIDERING ALL TITLES, FROM PRODUCTIVITY TO PROGRAMMING, ENTERTAINMENT TO EDUCATION

ACT NOW SEND YOUR PRODUCT WITH FULL INSTRUCTIONS INCLUDING YOUR DETAILS AND A TELEPHONE NUMBER TO -

S.E.C.S. LTD.
6 CALLOW CROFT,
BURBAGE,
WILTS SN8 3TB

CONFIDENTIALITY
FAST RESPONSE ASSURED

SECS

CENTRONICS INTERFACE

- Transparent to all s/w
  - no driver programme necessary
- Connect direct to 600 or 800/XL or 130 XE – or to disc drive if fitted

FCC SYSTEMS LIMITED
THE LODGE
MOORLANDS ROAD
MERRIOTT
SOMERSET TA16 5NF
TEL. CREWKERNE (0460) 73442
PRESTEL MAILBOX 046073442

£59.99
Includes VAT +£1 P&P

DEALER ENQUIRIES MOST WELCOME

```
310 IF N<10 THEN PRINT N0;"
 ";
317 REM 12 SPACES BETWEEN QUOTES
320 IF N>9 AND N<100 THEN PRINT N0;"
         ";
325 REM 11 SPACES BETWEEN QUOTES
330 IF N>99 THEN PRINT N0;"
";
339 REM 11 SPACES AFTER SECTORS
340 PRINT #2,N0;" USED SECTORS
  ";A0
350 PRINT #2:PRINT #2:PRINT #2:PRINT #
2:PRINT #2:CLOSE #1:CLOSE #2
360 POSITION 1,12:PRINT ;N;" FILES  ";
N$;" USED / ";A$
370 GOSUB 460:PRINT "   INSERT DISK AN
D PRESS ANY KEY"
380 OPEN #1,4,0,"K:"
390 GET #1,X:CLOSE #1:POSITION 0,5:Y=0
:GOTO 50
400 GRAPHICS 0:SETCOLOR 2,4,4
410 DL=PEEK(560)+PEEK(561)*256
420 POKE DL+3,70
430 FOR A=0 TO 1:POKE DL+A+6,6:NEXT A
440 POKE 87,2:PRINT #6,"UTILITY  PROGR
AM"
450 POSITION 0,2:PRINT #6,"disk index
print out"
460 POSITION 0,4:PRINT #6,"  BY  ROGEL
IO EWAN"
470 POKE 87,0:RETURN
479 REM 40 SPACES BETWEEN QUOTES
480 FOR I=10 TO Y STEP -1:POSITION 2,I
:PRINT "
            ";:NEXT I
490 POSITION 2,18:RETURN
495 REM 6 SPACES BEFORE PRINTER
500 GOSUB 480:PRINT "      PRINTER DID
 NOT RESPOND":GOTO 530
509 REM 4 SPACES BEFORE DISK
510 GOSUB 480:PRINT "    DISK DRIVE DI
D NOT RESPOND":GOTO 530
519 REM 12 SPACES BEFORE DISK
520 GOSUB 480:PRINT "            DISK
 ERROR":GOTO 530
530 CLOSE #1:CLOSE #2:FOR I=1 TO 1000:
NEXT I:GOTO 120
```

Tired of typing?
Take advantage of our finger-saving offer on Page 44.

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	5480	20	6078	30	1806
40	5010	50	9047	60	9157
70	8040	80	7719	90	9844
100	7465	110	8102	120	12577
130	1910	137	6750	140	9963
150	8391	160	10740	165	8112
170	13180	177	9920	180	14157
190	4279	200	7870	210	3164
220	2038	230	5320	240	1933
250	7500	255	8020	260	6729
270	6454	280	1610	290	7334
297	5807	300	2074	307	5203
310	6600	317	6751	320	7120
325	5749	330	5451	339	5477
340	6413	350	11814	360	3860
370	3626	380	2096	390	8061
400	5073	410	0453	420	2195
430	0005	440	7129	450	10371
460	7700	470	3323	479	8780
480	11406	490	4216	495	5503
500	10477	509	5006	510	11107
519	5005	520	8400	530	9206

S U N A R O
software

STAR CHOICE	BOULDERDASH II	C/D	8.50/12.75	STAR CHOICE
	SPY vs SPY II	C/D	8.50/12.75	
	KORONIS RIFT	/D	/12.75	
	GRAPHIC ARTS DEPT	/D	/28.95	

DISKS [illegible] CASSETTES [illegible] ROMS [illegible] ST SOFTWARE [illegible]

HARDWARE/PERIPHERALS AVAILABLE
CASSETTES FROM £1.95 DISKS FROM £8.75
NEW TITLES AVAILABLE IMMEDIATELY ON RELEASE
TELEPHONE (0625) 25228

Send Cheque/PO's to
Prices Include VAT & Postage

SUNARO SOFTWARE (AU)
PO BOX 78, MACCLESFIELD, CHESHIRE, SK10 3PF

SERIOUS BUSINESS OR SERIOUS HOBBY

OUR SERVICE DOESN'T STOP AT JUST GIVING COMPETITIVE PRICES AND A FAST FRIENDLY SERVICE. WHY NOT JOIN OUR COMPUTER DISCOUNT GROUP. SPECIAL ACORN, AMSTRAD & ATARI 520ST SUPPORT SECTIONS. LARGE RANGE OF ATARI 520ST PRODUCTS CURRENTLY AVAILABLE.

COMPUTERS [illegible]
PRINTERS [illegible]
MONITORS [illegible]
DISC DRIVES [illegible]
5¼" DISCS [illegible]

PLEASE PHONE IF YOU CANNOT SEE THE PRODUCTS YOU NEED

All prices include carriage & VAT. We carry most leading brand names. Please ring to confirm latest prices – You will find us unbeatable. [illegible]

K.E.C.M.
(KNIGHT ELECTRONICS COMPUTERS & MUSIC)
8 WESTWOOD LANE, WELLING, KENT DA16 2HE. TELE: 01 301 3746 (10am-10pm)
CALLERS BY PRIOR APPOINTMENT ONLY

But is Prestel all you need?

MY 1050 was supplied with DOS 3 0 How does it compare with DOS 2 5?

What is the minimum I need to use my Atari to get Prestel? The Miracle Modem is expensive at £195 compared with the offer currently made by Bank of Scotland at £95 for a separate system – **Simon Firth, Maidstone**

● Use DOS 2 5 if you get the chance It is much more efficient in terms of memory disc storage space and time taken to operate a given function

DOS 3 is very user friendly but this is where it falls down since once you know how to use it the prompts and defaults system proves very time consuming

See the review in the July 1985 issue of *Atari User* for more details

If you just want to use Prestel then you are right – a dedicated unit would be far cheaper than a computer interface and modem

However the Miracle Modem offers so much more – MicroLink bulletin boards inter computer communication and so on

Which unit you should buy depends on what you want to use it for and perhaps more importantly what you may want to use in the future

Best buy printer

I HAVE found that there are very few people in my area with Atari computers since I got my 800XL at Christmas and was wondering if you could please print the address of the nearest Atari Users Club to my home address

I would also like to know if it is possible to buy a cheaper printer than the Atari 1029 which costs £197 90 and buy an interface lead to make it compatible with my 800XL – **Jonathan Curle, Bath**

● There are printers cheaper than the 1029 the replacement for the 1025 which was never made available

However you'd need an interface for them which would knock the cost back up again

Atari's own printers are about the cheapest to run with Atari computers

You could of course get the 1027 letter quality printer or the 1020 printer/plotter which is less than £100 but have a good look at that one first as it can't use anything wider than 4in roll paper

Atari's own

I AM going to buy a 130XE and disc drive – I currently own an 800 and ancient 410 cassette recorder

When I have bought this system I would like to purchase a printer Please could you tell me one which will match up to the following specifications

Be able to print on A4 size paper have friction feed have the ability to do screen dumps and cost around £200 or less I am not too concerned about noise or printing speed – **Andrew Young, Mitcham**

● Why not take a look at Atari's own 1029 printer? It has the advantage that it is completely compatible with your system

Search for an Indus

I HAVE bought the new Atari 130XE a cassette drive and a television I now want to get a disc drive and have decided to buy the Indus G T

The problem is that I can't find any shop which sells the Indus in this country I have thought of importing it from America

Is there a shop which repairs the Indus in this country? **Hardev Kambo, Middlesex**

● The Indus GT is a superb disc drive but you will find great difficulty in obtaining it and maintaining it in the UK

Before it went bankrupt the Home Entertainment Atari Centre in Broad Street Birmingham imported a limited quantity but the prices proved to be prohibitive (around £400) and service cover could not be provided

I would say your best bet would be to purchase an Atari 1050 drive for which there is excellent service cover and fit a US Doubler (£79 95) which will provide you with all of the densities that the Indus can offer

OK so you don't get the pretty lights on the front panel but are they really worth about £200 and no service cover?

I have done this and am very happy indeed with the results – especially the threefold speed improvement

André Willey

Wiring worries

I USED to have an Atari 600XL and the computer to television lead was just a wire with a plug on each end

I have just bought an 800XL and the cable to the TV has a small black box a little way along it Do you know what this is for?

Would an ordinary computer TV cable work with my computer?

Also do you know if there is any difference between Atari Pole Position and the one imported by US Gold? **Peter Goulden, Lincoln**

● The black box in your cable is simply a ferrite bead a device which helps to reduce interference

You can use the old cable with no problems although you might find that the picture is slightly less clear

The game play on Atari's and US Gold's Pole Position is the same Datasoft in the States bought the rights to the game when Atari relinquished them last year

Thus US Gold now produces a version using licence from Datasoft, while the Atari one is basically a remnant from the old deal.

The game is the same in both cases except for the Datasoft or Atari banners.

Expansion plans

I HAVE an Atari 400 with 16k memory and am desperate to buy a 48k memory expansion unit partly so that I can use my assembler written in Basic in hi res graphics modes and also so I can play the latest memory gobbling games

Atari no longer make the units and none of the dealers I have rung can get hold of one

Can you help? Someone in the country must have one to sell me!

How about a private advertisers section in Atari User then this sort of problem would be easy to solve

Also can you tell me of a flight simulator on cassette or ROM that I can use? – **S Holder, London SW18**

● We don't know of any flight simulator that will run in 16k – if anyone has found one let us know

On the memory point the last price on 48k memory boards for Atari 400s was £80 Even if anyone had any left it would still be cheaper to buy a new 800XL from Dixons – for which you would have a 64k machine with a real keyboard a new recorder five games and a new joystick.

You can then recoup some of your expense by selling your old 400/recorder/joystick to a friend or via a local newspaper

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros about tips you would like to pass on to other users and about what you would like to see in future issues

The address to write to is

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Maze Munch score

I ENJOYED Maze Munch your best game listing to date However the score does not increment on-screen (it s POKEd) when run on the 600XL, whereas it works perfectly on an 800XL

Is this connected with a bug in Atari ROM at PEEK(43234) which is responsible for unnecessary Error 9 reports and worse still causes keyboard lock ups with total loss of program control?

The value of this address on the 600XL is 96 It should be 234 Are there any 600XLs with the bug-free Rev C Basic available as I have had problems with a few other listings and commercial tapes?

Finally, here is a short routine for readers to experiment with, or add to a program

```
10 FOR Z=0 TO 255
20 FOR DE=1 TO 60:NEXT DE
30 SOUND 0,255-Z,10,15:SOUND 1,Z,10,7
40 POKE 53768,Z:NEXT Z
```

– **M A Phillips, Bristol.**

● Your problem is much more likely to be caused by lack of memory than by the error 9 bug To the best of our knowledge however none of the UK 800XLs or 600XLs have Rev C Basic in them

This is only available on the 130XE or in cartridge form from main Atari dealers If anyone has found differently please let us know

Cartridge port

I HAVE an Atari 400 and am thinking about buying the 130XE but I am not sure if it has a cartridge port or not

Second problem I have a light pen made by Dams and wonder which joystick port it would connect to – **Ross Oldfield, Dunstable.**

● Yes the 130XE does have a cartridge port (at the back) and everything else that the 800XL has plus 128k of course (See our review in issue 2)

It only has two joystick ports but then how many four-player games do you know?

The light pen assuming it works with the Atari can be plugged into port 1 or sometimes on older 400s port 4 – I don t know why

You can PEEK locations 564 and 565 to get the x and y positions These range from 0 to 228 but may need a little modification to correct the zero and maximum points for the edge of your TV set

Use STICK(0) or STICK(3) to check for the pen button being pressed

André Willey

Loading problems

I AM tired of Basic tapes The problem is some just do not load at all

For instance I bought a pack of C15 Boots cassettes I typed in a program and saved it but it wouldn t load

At the beginning of loading the cassette noise through the speakers usually makes a whistle But on the Boots cassettes it does not make this sound

Could you tell me which cassettes work and which do not? – **Chris Beard, Nottingham**

● If your recorder has so far only been used to load games you may find that your recorder is faulty and will not save although it will load correctly

Try saving to other tapes such as TDK C 60 to see if this is the case

If you still don t get anything take your recorder back for repair If it does work then your question is answered

Price of memory

I AM pleased to see the efforts being made to increase Atari popularity but feel that purchasers of the 600XL have been badly let down

The 800XL has become available for approximately £100 and yet the memory expansion for the 600XL is still priced at approximately £90

Have Atari any plans to make the expansion cheaper for the people who supported the launch of the XL range?

I think your magazine is superb and hope the standard set with the first three issues is maintained

I would like though to make a couple of small points Please include memory requirements when reviewing software and don t spoil the letters page by including my score is higher than your score letters – **S Harrington, Runcorn**

K-Spread comments

HAVING just read the review of our program K Spread for the Atari ST in the March issue of Atari User we would like to make a few points known to your readers regarding some of the comments made Some of this information was given to André Willey, however it obviously missed being mentioned in the review

1 Copies of our ST applications software are now protected however this does allow users to make a back-up copy for day-to-day use it can also be copied to a hard disc without problems

2 Two bugs were mentioned regarding the Save routine The first does not exist the second was only present on a few early discs and has since been rectified

3 The version on sale checks for formulae when alterations are made, if no formulae are present the changes are accepted straight away If there are formulae the user is presented with an option regarding changes

4 We have an intensive development program under way and are working on a large number of added features We have a positive upgrade policy whereby users of current versions will be able to upgrade to new versions at minimal cost

5 Business graphics will be available when the data compatible program K-Graph is released towards the end of this quarter

I hope you will be able to make this information available to your readers We will of course keep you updated regarding new and improved products to our ST software range – **Jon Day, Sales Manager, Kuma Software**

● Andre Willey replies I did get a new copy of the program but the March issue containing the review was already at the printers

As to Jon s points

1 Fair enough If Kuma can protect software and still allow use of a **hard disc without**

needing to use the master disc again great Good luck to them It seems to work too

2 The Give/Take bug does exist. If you GIVE a file with long text items in it the TAKE does not retrieve the same information This has been corrected on later revisions The same applies to the Can t drag cell on to desktop bug Both of these are present on a number of shop stock copies although exchanges have now been arranged by Kuma

3 Good What else can I say?

4 Also good The new version contains a couple of nice new features including headers/footers minus sign or brackets an option to turn off the coloured backing to text fields and a few others Well done to Kuma for listening to their customers – not all companies do!

5 Strange that s just what I said

My conclusions still stand anyway and we re grateful to Jon for giving us an update on the situation

Memory module

IN the February issue of Atari User J B Giscott asked for information on the 64k memory module Silica Shop (01 301 1111) will supply him with one

I think the best game available for Atari micros at present is Chimera by Firebird It is a 3-D room game in a similar style to Alien 8 – only much, much better

I m sure any Atari owner would agree that the loading picture is better than anything ever seen before and the pause mode will shame even Colourspace

Is it possible to use pictures generated on the Atari Touch Tablet in your own programs – for example an adventure game with graphics drawn on the tablet?

Lastly I must say I was shocked to hear you say that a very annoyed person s gerbils should be sautéd lightly and served in a white sauce

Anyone knows that the [illegible] way to cook a gerbil is to grill it for 10 20 minutes, put a slice of cheese on it and put it in between two slices of bread! – **L. Wheelhouse, Sheffield**

● *What is it about Rob Harding? He gets his picture in every issue*

Good service

I AM not normally prone to putting pen to paper especially to compliment a company

However my recent dealings with Compumart Ltd have prompted me to do so As I am a regular reader of Atari User it seemed the best place to voice my compliments

My initial dealings with Compumart was by way of an order for a 1027 Atari printer on special offer On contacting the firm I received some very helpful advice and answers to my questions

The order was promptl[illegible] dispatched and arrived wit[illegible] 48 hours However within [illegible] few weeks it was appa[illegible] that the printer was defect[illegible] On contacting Compum[illegible] they offered their apolog[illegible] and an immediate replacement printer

In addition they gave m[illegible] the option of swapping [illegible] 1027 model with a 1029 [illegible] matrix machine

On reflection this shoul[illegible] have been my initial choice [illegible] doing this they will have [illegible] refund me money from th[illegible] initial order

It s so pleasant to find a company that really does have the customer at heart and the professionalism to match

As a new Atari user I am very confident that with Atari itself shops like Compumart and the quality of Atari User things could not look better – **M S Allen, Havant, Hants.**

Not so far Right!

I'M sure it must be libel[illegible]

describe my [illegible] to the right of [illegible] as Brillig, pre[illegible] hiding behind [illegible] did in the March [illegible] Conservative MPs [illegible] the BBC for saying [illegible]

Fortunately, I'm [illegible] wishy washy Liberal [illegible] I ll be satisfied if you [illegible] letter to correct the [illegible]

Brillig is equally wron[illegible] when he claims that any [illegible] Level 9 s own adventures are based on existing books. They aren t – I do my damndest to avoid similarities when designing game worlds

However when writing the introductions to games I have occasionally listed my favourite SF books on similar themes For the benefit of readers that s all

To complete the list Brillig describes the firing of particle-beam engines from an orbiting starship to destroy a [illegible] being [illegible]

[illegible] were [illegible] system [illegible] s type [illegible] ile there [illegible] hitting [illegible] moving [illegible] ' first [illegible] stationary [illegible] seems [illegible] gh energy [illegible]

[illegible] SDI could be [illegible] is one reason [illegible] be so dangero[illegible]

[illegible] not seen the exact [illegible] used before in SF, but L[illegible] Niven proposed somethin[illegible] similar in "The Warriors" (Tales of Known Space from Orbit) – **Peter Austin, Level 9 Computing**

● As Alex would no doubt be at pains to point out after such a dressing down he does not write Brillig s adventure column

Don't be an

APRIL FOOL

Buy your

520 STM, 520 STFM or 1040 ST.

NOW

MIKES COMPUTER STORE

392 London Road, Westcliff-on-Sea, Essex.
Tel Southend (0702) 332554

YOUR LOCAL ATARI SPECIALIST

OPEN 9 00-5 30pm MON-SAT

VISA

ATARI IN MANCHESTER

THE BEST SELECTION OF SOFTWARE IN THE MANCHESTER AREA! WE SPECIALISE ONLY IN ATARI INCLUDING 2600(VCS) VIDEO GAMES MAIL ORDER WITH PLEASURE, SAE FOR LISTS (STATE INTERESTS)

CASSETTE ● DISK ● ROM ● JOYSTICKS ● BOOKS ● MAGS ● ETC

NEW RELEASES
TECHNICOLOR DREAM ● PANIC EXPRESS ● SCREAMING WINGS ● SKY FOX ● BOULDER DASH II ● STEVE DAVIS SNOOKER ● SUPER HUEY ● JET SET WILLY ETC

ATARI WORLD
15 FENNEL STREET
MANCHESTER M4 3DU
Tel. 061-835 1055
OPEN MON FRI 10am 5pm
SAT 10am 5 30pm

ATARI 400/600/800/XL/XE UTILITIES AND GAMES

HOWFEN DOS A new disc file management system 7 functions including tape to disc, disc to tape and disc to disc all presented on a colourful menu. £19 95

AUTOMENU Automatically lists every file on disc (Basic or Binary) and will run them at the press of a button £11 95

BINBOOT Converts binary files to boot tape or disc £6 95

DISCOUPE 3 Many features including fast sector mover £15 95

KT4 A tape utility every cassette owner needs £9 95

BOOTBASIC Convert your basic programs to boot format £8 95

DOS-MOD Modify Atari DOS to work in true double density when used with 1050 with Doubler and in Happy. Gives 180k capacity on EACH side of the disc £9 95

GAMES A large selection of used ORIGINAL software on tape disc and cartridge at half new price or less

For full details of this range of tape/disc/cartridge utilities and games send large SAE to

HOWFEN SOFT
105 BARKSIDE, WESTHOUGHTON
BOLTON, LANCS

HANDY-KAP (TM)

Perspex Dustcovers and Monitor/Disk Standards

For Atari **130 520 6/800**

Please send me (type)

☐ Cover **£8.** ☐ MD Stand **£30.**

Name
Address

I enclose cheque/PO (incl VAT & P&P)
(Payable to HANDIC PLASTICS) Sign

31 Knellergardens TW7 7NP Isleworth Middlesex
Dealer Enquiries Welcome Phone 01898 5829

ATARI ENTHUSIASTS

WE HAVE A UTILITY TO SUIT YOUR NEEDS

Description	*Price*	
XL/XE Ultimon	£49 95	*a hardware mod*
XL/XE Ultimon + Triplex	£69 95	*a hardware mod*
400/800 Ultimon	£49 95	*a hardware mod*
XL/XE 80 columns	£49 95	*a hardware mod*
XL/XE Triplex	£29 95	*a hardware mod*
400/800 80 columns	£49 95	*a hardware mod*
XL/XE Superchip	£39 95	*a hardware mod*
XL/XE Superchip + Triplex	£59 95	*a hardware mod*
400/800 Superchip	£44 95	*a hardware mod*
XL/XE XOS/Fix Chip	£28 95	*a hardware mod*
*Backup Pac	£19 95	*various*
400/800 The Gap	£24 95	*a hardware mod*
256k RAM for 800XL Including Ramdisc software for all DOS systems (Full 130XE compatibility)	£129 95	*a hardware mod*
XOS Translator	£6 95	*on disc*
The Gap!	£29 95	*a hardware mod*
Over Write!	£7 95	*a disc drive mod*
Fast Sector	£16 95	*a disc drive mod*
Fortprint	£29 95	*cable & disc or cass*
File Loader	£2 95	*on disc*
* Boot Loader	£14 95	*on disc*
* Disc Backup	£9 95	*on disc*
* XE Disc Backup	£12 95	*on disc*
Synrhythms	£7 95	*on disc or cass*
Utility Pac One	£9 95	*on disc*
Utility Pac Two	£8 95	*on disc*
* Cassette Backup	£9 95	*on disc or cass.*

Dealer Enquiries Welcome

Mail order only. To order send cheque or Postal order to

COMPUTER SUPPORT (UK) LTD.
26 Seacourt Road, Abbey Wood, London SE2 9UW
Tel 01-311 7339

All prices include Postage & Packing
** Sold subject to not infringing copyright*

LOWEST PRICES FOR ATARI ON MERSEYSIDE

HOME & BUSINESS SOFTWARE

A huge range of software and accessories for the 520ST & all other Ataris

RELIABLE MAIL ORDER SERVICE

- Software from all the best suppliers over the counter
- Books & Accessories
- Games Education & Programming Aids
- Late night opening Mon-Sat until 8pm
- Come in & try it before you buy it

Microbyte

051 630 5933
71 SEAVIEW ROAD WALLASEY

CHIPS

ATARI SPECIALISTS

WE BUY, SELL, PART EXCHANGE
ALL TYPES OF COMPUTER EQUIPMENT
THE LOWEST PRICES POSSIBLE
XL, XE, ST RANGE ALL IN STOCK
RING US LAST FOR THE BEST QUOTE

130XE £99.98 + p&p
130XE/1050 £199.95 + p&p

CHIPS COMPUTER CENTRE
53 RUGBY ROAD, WORTHING, SUSSEX BN11 5NB
NEW BULLETIN BOARD SERVICE
300 Baud Ring Back Tel (0903) 503711 24 hours
TEL (0903) 40909 (24 hours)

PRINTERLAND

ORDERED TODAY DELIVERED TOMORROW

Government, overseas and official orders welcome

KAGA TAXAN KP810 – Ring for Unbeatable Price!

	EX VAT	INC VAT
CANON 1080A	£225.00	£258.75
■ DOT MATRIX		
EPSON LX80	£190 00	£218 15
JUKI 5510 (colour option)	£249 00	£286 35
CANON 1156	£335 00	£385 25
EPSON FX85	£360 00	£414 00
EPSON FX105	£455 00	£523 25
■ DAISY WHEEL		
QUENDATA 1120	£225 00	£258 75
EPSON DX100 SPECIAL OFFER	£356 00	£409 40
■ ACCESSORIES		
WORDWISE +	£43 00	£49 45
BBC PRINTER CABLE	£8 00	£9 25
■ MONITORS		
PHILIPS 7502 GREEN	£75 00	£86 25

NOW ONLY 3 MINUTES FROM JUNCTION 23 M62
(MANCHESTER 25 MINUTES/LEEDS 20 MINUTES)
NB. FROM EAST USE JUNCTION 24

156 LONGWOOD GATE, LONGWOOD
HUDDERSFIELD
Tel 0484 646048/9

That 'k' rating

I SUGGEST that you might ask your software advertisers to indicate the k rating of the games they advertise – 16k 32k or whatever as I have found it an expensive exercise having to write to firms enclosing an SAE to find out if a game is suitable for my 800XL.

Also could you please advise me if it is possible to obtain a RAM pack to upgrade to 48k I have written to several firms but had no luck so far Maybe some of your other readers could help me – **E. Cottrell, Irvine, Ayrshire.**

● Silica shop should have the RAM pack but at present day costs you might be able to find an 800XL for less

1020 and Atari Writer

WITH reference to the letter from E C Jones in the February issue of Atari User I also had problems using the 1020 with Atari Writer After much experimenting I found the following procedures solved them

Select option 1 when asked for the type of printer Then Put Ctrl-0 27 at the beginning of each instruction in place of the ESC ESC in the 1020 instruction manual

Then type Ctrl O followed by the ATAscii number corresponding to the instruction

*For example to change to the red pen instead of typing ESC ESC Ctrl G * C3 * A you would put Ctrl O 27 Ctrl-O 7*C3*A*

Finally put text and graphics instructions on seperate lines **Steven Burke, Bexley Heath**

Attract mode

HAVING bought an Atari 800XL six weeks ago I find myself with a major problem I am working on a football manager type game which is coming on well

The problem is that after 20 minutes or so the screen changes colour when the program is running The game is almost all joystick controlled as is Dex Bells (from Atari User) which does the same thing

Is there a poke or some way of preventing this change of colour?

I have just swapped my Spectrum to buy the Atari and I m impressed to say the least after a year of the Spectrum – **Steve Kennedy, Stranraer.**

● To prevent the attract mode you need to POKE 77 0 at regular intervals in your program

Problems solved

I HAVE answers to two questions raised in February s Atari User Mailbag – and one question

Patrick McDonald s problem on cassette loading technique could well be the location of his recorder If it is within two feet of his TV or monitor the very strong magnetic field generated by this equipment will often corrupt data stored on magnetic tape

I had the same problem and relocating the recorder away from the TV solved it

He may or may not be lucky in salvaging the existing information on his tapes Better buy a disc drive

Mr A G Formoy s question on Bridge programs for the Atari is easily answered I have two Both are American and use the Goran convention which should present no difficulty to an experienced player

They both include Blackwood for slam bidding and one of them keeps score including vulnerability

Both my wife and I keep in practice by regularly playing bridge with our Atari It doesn t drink either or pay when it loses!

One program is by Artworx the other by CMC I got them in the US but I m sure they are available here from Software Express or Silica Shop

If anyone wants more information they can call me on Tunbridge Wells 20694

My question is when are we going to see a RAM disc add-on for the 800XL to match the 130XE and when are software writers going to take advantage of this facility to add more features and effects to their programs?

Also I am looking for an 80 column word processor – I m tired of my 40 column AtariWriter!

On last thing Would you please give a plug to TWAG – the Tunbridge Wells Atari Group – **A C (Tony) Chamberlain, Tunbridge Wells**

Not worth changing . . .

AS a prospective Atari buyer and a current Commodore 64 owner I was very interested to read in the February Atari User of the difficulties some of your readers have experienced with their Atari computers and hardware particularly about the reader who considered changing to Commodore

This is because since buying my Commodore 64 in August 1984 I have had to change it three times due to faults with the computer or missing accessories

The CBM64 I finally settled for developed a fault with its SID chip and had to be sent for repair taking seven weeks

On the day I received it back and having also bought a disc drive I connected them up only to find the computer would not work with the disc drive

I had to wait 15 weeks for the computer to be repaired

I hope your readers will see that it is not just Atari who have problems and that if Atari s future looks exciting then the prospects of other computer manufacturers look positively retrogressive – **Sanjen Maharaf, London N3**

P.F. SOFTWARE

SMART ART (16k)

- OVER 80 DIFFERENT COLOURS CAN BE DISPLAYED AT ONCE
- INTERRUPT DRIVEN CURSOR
- 4 BRUSH SIZES
- 3 BRUSH SPEEDS
- AIR BRUSH MODE
- PLOT
- DRAWTO
- FILL
- DRAW BOX
- DRAW CIRCLE
- SAVE PICTURE
- LOAD PICTURE
- SEPARATE PROGRAM TO DISPLAY PICTURE
- DEMO PICTURE

AVAILABLE ON CASSETTE FOR ALL ATARI 8 BIT COMPUTERS ONLY . £3 50

(Previous purchasers of Art Atari can upgrade to SMART ART for only £1 00)

ALSO AVAILABLE

BLACKJACK (16K) Realistic card display	£1 95
PICTURE PUZZLE (32K) Two pictures to choose from	£2 65
PICTURE TORMENT (16K) Very difficult	£2 95
FRUIT SALAD (16K) Colourful version of mastermind	£2.95
FRUIT PICKIN (16K) Arcade action	£2.95
(Order both FRUIT SALAD & FRUIT PICKIN for only	£4 50)

Cheques & P O s to
(Overseas orders for single programs please add £0 50)

P F SOFTWARE (Dept AU)
14 KIRKSTALL AVENUE
LITTLEBOROUGH
LANCS OL15 9JA

These back issues are still available

May 1985 issue: Profile of Jack Tramiel, preview of the new machines, Attack Squash, Adventuring, Alphabet Train, Hexer utility, Software reviews, Sounds, the 6502 Microscope, Atari Insights – Bit Wise, Beginners and Graphics.

June issue. Analysis of the 130XE, Submarine, Adventuring, Random numbers, Software reviews, Frog Jump, Microscope, Sounds, Atari Insights – Bit Wise, Beginners and Graphics, special 12 page feature on Communications.

July issue. Disassembler, Bomb Run, DOS 2.5, 17 Commandments, Adventuring, Display List Tutorial, Software reviews, Power Functions, Treasure Hunt, Keyboard Sounds, Microscope, Insights – Bit Wise, Beginners and Graphics.

August issue. Analysis of 520ST program protection routines, Frutti Gambler, Assembler, Touch Tablet programs, first look at Logo, Raider 1997, Dos 2.5 upgrade offer, Display List Tutorial, Microscope, Software reviews, Insights – Bit Wise, Beginners and Graphics.

September issue: 5-page special on the 520ST, Mode 8 screen dump routine, Maze Munch, Data Maker, Display List Tutorial, 68000 addressing modes, list processing with Logo, Software reviews, Insights – Bit Wise, Beginners and Graphics.

October issue. Computer Canvas graphics program, Updater for RAW 6502 assembler, 130XE Ram disc utility, Hex/Asc memory dump utility, Pontoon, Software reviews, 68000 operating environment, Wraptrap, Insights – Bit Wise, Beginners and Graphics.

November issue: Converse program, Bitwise operator utility, ST graphics examples, ST software list, Guy Fawkes game, Display List tutorial, Adventuring, Microscope, Software reviews, Insights – Bit Wise, Beginners and Graphics.

December issue: Check sum program, Special keyboard characters, Basic XL review, GemWrite and GemDraw, Countdown game, Disco, Display List tutorial, Software reviews, Left handed joystick, Adventuring, Beginners and Graphics.

January 1986 issue. Machine code games Pt. 1, Atari in education, Sero, ST monitor review, *Hunchy*, game, Check sum update, Listing utility, Dotsquare game, 1020 screen dump routine, programming in C on the ST, Adventuring, Software reviews.

February issue: Machine code games Pt. 2, Dragon curves in Logo, Flashing colour utility, Micropainter manipulator, Bridge program, Memory management techniques, Interrupt driven clock, Bounce game, ST problem page, Adventuring, Software reviews.

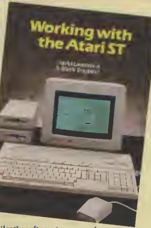
March issue: Machine code games Pt. 3, Knight's tour program, Compiler Pt. 1, Supercript review, Check sums for early games, Book reviews, Adventuring, Software reviews. PLUS **Atari ST User**: K Spread review, Jeff Minter and Colour space, Music Pt. 1, Making the most of the ST.

£1.25 EACH

Atari ST User
ATARI USER
ATARI USER
ATARI USER
ATARI USER
ATARI USER
Computer Art

ATARI USER
ATARI USER
ATARI USER
ATARI USER
ATARI USER

MORE power – without the price!



Remember Jack Tramiel's promise? Well, for ST users, or those who are about to buy an ST, this book will help them get even more power – and the price isn't bad either!

For if you take out a subscription to *Atari User* we'll send this valuable, fact-packed book to you for HALF PRICE!

- GEM explained: How to tailor the software to your needs
- Guide to TOS and the languages Basic and Logo
- Introduction to the ST's graphics and music capabilities
- Applications: How to make the most of a unique machine

SAVE £4 on this special offer!

£3.95

(RRP £7.95)

Not available at this special price unless accompanied by a subscription order – see order form on opposite page. If you already have a subscription which does not expire fopr several months you can re-order early to benefit from this offer

Bring all the excitement of professional snooker into your home!

CDS Micro Systems
STEVE DAVIS SNOOKER
SNOOKER
WORLD 1 NUMBER

If you already have a subscription which does not expire for several months you can re-order early to benefit from this exceptional offer

You can save up to £8 with this exclusive subscription offer

Steve Davis Snooker is the ultimate computer version of the game that has millions of viewers glued to the TV sets.

Its many features include:

- Reset previous shot facility.
- Accurately definable spin
- Infinitely variable speeds
- Highest break table
- True to life ball movement

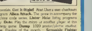
If you take out a subscription for *Atari User* using the order form opposite you can obtain Steve Davis Snooker at an unbeatable price:

£4.95 on disc *(RRP £12.95)*
£3.95 cassette *(RRP £9.95)*

(Not available without subscription)

Keying in long programs too much of a chore?

Then give your fingers a rest by sending for our monthly disc or cassette containing all the programs from each issue of Atari User. See order form opposite



MAY 1985 Alphabet Train This early learning game's a winner with the children. **Sounds Interesting** Ready made sounds. **Hexer** Enter display and run machine code programs with this hexadecimal loader. **Attack Squash.** Fast action game. **Reaction Timer** How fast are your reactions? **Binary** Convert denary numbers to binary notation.

JUNE. Frog Jump Guide the frog to his home in this version of the arcade classic. **130XE Ram Power** Use the extra 64k of memory to good effect. **Submarine:** Scuttle the submarines. **Etcha-Sketch:** Draw pictures with a joystick. **Random Numbers.** Get random numbers from machine code. **Filthy Fifteen.** Can you keep the Filthy Fifteen happy in their cells?

JULY Bomb Run Flatten the deserted city and land safely. **Disassembler** Find out what's going on deep inside your Atari. **Treasure Hunt** Use logical thinking to find the treasure. **Password Generator** Keep generating passwords till you find one you like. **Keyboard.** Convert your micro into an organ. **Quasimodo.** Can you sort out the mess of ropes in the belfry?

AUGUST Assembler Make machine code programming easier. **Fruit Gambler** Save money with this fruit machine emulation. **Mandala** Complex patterns made easy. **Protection.** Protect your programs from prying eyes. **Display List.** Demonstration programs. **Raider 1997** Futuristic text adventure. **Touch Tablet** Demonstration programs.

SEPTEMBER. Maze Munch Help Horace the Blob munch the maze monsters morsels. **Data Maker** Convert your machine code routines to DATA statements. **Display List:** Demonstration programs. **Screen Dumps:** Dump your Mode 8 screens to a 1029 printer. **Bricks** Solve the Bricks problem.

OCTOBER. Pontoon: Twist? Bust. **Memory Dump.** Examine memory in hex and Ascii. **Display List.** Demonstration programs. **Warp Trap** Action game for one or two players. **Computer Canvas.** Make your own micro masterpiece. **Assembler Update.** Improvements for RAW assembler. **Ram Disc:** Make the most of the 130XE's extra memory.

NOVEMBER Guy Fawkes: Help Guy escape from the guards. **Converse** Teach your Atari to be a psychotherapist. **Display List:** Demonstration programs. **Bitwise Operators.** Utility to provide logical functions. **Circle:** Draw and fill a circle. ***Plus.*** Freebie of the month — **Creepshow** machine code pinball game.

DECEMBER. Countdown Micro version of the famous TV game. **Get It Right!** Atari User's own check sum program. **Disco** Son et lumiere on your Atari. **List Utility** Makes listing easier. **Display List** Demonstration programs. ***Plus:*** Freebie of the month - **Jane's Program** machine code entertainment.

JANUARY 1986 Belle Help Mr Humpy rescue Esmerelda. **Get It Right!** Atari User's own checksum program. **Alien Attack.** The game to accompany the machine code series. **Lister** Make listing programs easy. **Dots:** Play the micro or another player at this strategy game. **Dump** 1020 printer/plotter routine. **Plus** Freebie of the month — **Scramble Fighter** machine code game.

FEBRUARY Micropainter Programs to manipulate Micropainter screens. **Clock:** Interrupt driven clock utility. **Flasher** Flashing colour utility. **Bounce!** Simple to play, hard to master. **Bridge:** The thinking person's card game. ***Plus.*** Freebie of the month. **Demon's Lair** an adventure game you may never escape from.

MARCH. Horse Play Knight's tour program. **Basic Compiler** Program to accompany the new series. **Alien Attack.** Final part of assembly listing. **Plus.** Freebie of the month. **Winston in the Caves** Can you keep your head and help Winston find his?

APRIL. Synthesiser Activate the hidden depths of the Atari sound chip. **Disc index:** Keep track of disc files and free space with this index printing program. **Graphics:** Make the most of Modes 12 and 13. **Mancuna.** Can you beat the game that learns from its mistakes?

ATARI USER MAIL ORDER OFFERS

Your Atari needs protecting

Now for the 800XL and ST range

Protect your ST, 130XE or 800XL with our luxury dust cover made of soft, pliable, clear and water-resistant vinyl, bound with strong cotton and decorated with the magazine's logo

only **£3.95**

Keep your collection complete

Bound in chocolate brown pvc and bearing the Atari User logo, this handsome binder will hold a year's supply of the magazines firmly secured in place with metal rods

only **£3.95**

Here's a really unbeatable offer for all Atari users!

This top quality T shirt woven in an attractive shade of grey with the Atari logo in red is a genuine American 'Fruit of the Loom' product, made from 50% cotton/50% polyester

The T shirts are on sale at £4.25 Please order on our official order form

Made in three sizes	
Small	34"-36"
Medium	36"-38"
Large	38"-40"

ATARI USER ORDER FORM

All prices include postage, packing and VAT
Overseas orders despatched by Air mail

Valid to April 30, 1986

Please enter number required in box (✓) £ p

Annual subscription

UK & EIRE £12 (sterling only)	7001	☐
Europe £15	7003	☐
Overseas (Airmail) £30	7004	☐
Tick box if renewal		☐

Commence with ______ issue

Exclusive offers for subscribers

Steve Davies Snooker	Tape £3.95*	7066	☐
	Disc £4.95†	7067	☐

*Add £1 Europe/Overseas
†Add £2 Europe/Overseas

Working With the Atari ST	£3.95‡	7065	☐

‡Add £2 for Europe/Overseas

These offers only available if accompanied by a subscription order

Back issues

£1.25 UK & Eire
£2.25 Europe
£3.25 Overseas Airmail

1985	May	7004	☐
	June	7006	☐
	July	7007	☐
	Aug	7008	☐
	Sept	7009	☐
	Oct	7010	☐
	Nov	7011	☐
	Dec	7012	☐
1986	Jan	7013	☐
	Feb	7014	☐
	Mar	7015	☐

Monthly Cassette/Disc

Cassette
£3.95 UK
£4.95 Europe/Overseas

Disc
£5.95 UK
£6.95 Europe Overseas

		Tape	Disc
	May	Not available	7017 ☐
	Jun		7018 ☐
	Jul		7019 ☐
	Aug		7020 ☐
	Sept		7021 ☐
	Oct	7122 ☐	7022 ☐
	Nov	7123 ☐	7023 ☐
	Dec	7124 ☐	7024 ☐
1986	Jan	7125 ☐	7025 ☐
	Feb	7126 ☐	7026 ☐
	Mar	7127 ☐	7027 ☐
	April	7128 ☐	7028 ☐

T-Shirt

£4.25 UK
£5.25 Europe
£5.75 Overseas Airmail

Small	7047	☐
Medium	7048	☐
Large	7049	☐

Dust Cover

£3.95 UK
£4.95 Europe and Overseas

130XE	7031	☐
800XL	7060	☐
ST	7064	☐

Binder

£3.95 UK
£5.95 Europe £10.95 Overseas Airmail

7029 ☐

Payment please indicate method (✓)

TOTAL ______

☐ Access/Mastercard/Eurocard

☐ Barclaycard/Visa

☐ Cheque/PO made payable to Database Publications Ltd

Credit card expiry date ☐ /

Name ______

Address ______

Signed ______

Send to: *Atari User* FREEPOST Europa House
68 Chester Road Hazel Grove Stockport SK7 5NY

Please allow 28 days for delivery

Order at any time of the day or night

Orders by Prestel **Key *89, then 614568383**

Telephone Orders **061-429 7931**

Enquiries only **061-480 0171 9am-5pm**

Don't forget to give your name, address and credit card number AT 4

WOOTTON COMPUTERS

PHONE FOR THE MONTH'S SPECIAL OFFERS!!

MORE ST FOR LESS £p's

	Normal	Our price
520ST Module		Phone
520ST FM Built in Disc Drive + ½ Meg Dbl Drive		Plus
1040STF 1 Meg RAM + 1 Meg Disc Drive + 1 Meg Disk + Colour Monitor		POA

ST SAMPLE SOFTWARE PRICES

Degas £35.95 K Spread £40.95 Brataccas £32.00 K Ramdisk £27.95 G-ST "C" £57.95, Rhythm Spreadsheet £32.95 Hex £31.95 [illegible] £19.95

Atari 12" Med Res Col Monitor	£386.00	£381.00

ALL ST BUSINESS GAMES SOFTWARE AND UTILITIES TO BE AVAILABLE AT THE LOWEST PRICES

	Normal	Our price
130XE 128k Computer	£169.99	£129.95
800XE + XC11 Cassette Deck + Free Joystick + Music 2048 etc	£211.98	£187.60
130XE + 1050 Disc Drive + Home Filing Manager + Pay Off Adventure + Demon Attack Disc (£35)	£298.95	£255.00
1050 Disc Drive + DOS 3 + DOS 2.5	£129.77	£119.00
130XE + 1051 Disc Drive + 1027 Printer + Atariwriter + 3 pcs Software + DOS 2.5 Disc + Demo	£558.04	£469.00
N.C.S PERIPHERALS		
1020 Printer/Plotter	£99.95	£70.95
Mannesmann Tally MT 80 + (10 Sept)	£249.53	£210.95
1027 Letter Quality Printer + Atariwriter Soft	£250.00	£140.95
1029 Dot Matrix Atari Printer + Atariwriter	£199.00	£115.00
Mannesmann Tally MT85	£499.00	£381.00
CX77 Touch Tablet + Atari Art Soft	£49.99	£29.95
850 Interface	£69.99	£49.95
SPECIAL SOFTWARE PRICES		
Cartridges from £6.00		
Miner 2049er, Mountain King, Krazy Antics, Pacman, Krazy Shoot Out, Centipede etc. Cassettes: Flak ack, Pengo, plus many others. Prices from £1.00		
All Atarisoft software available at giveaway prices. Please phone for full details of stocks.		
EDUCATION/PROGRAMMING		
Assembler Editor	£22.00	£18.95
Universal and Frenchlike Spanish/le Norwegian	£23.95	£17.50
Maths 'O' Level Course. Year 1/2/3 or 4	(cass) £8.95	£12.95 (disc)
Maths 'O' Level Course. Year 5 also	(cass) £9.95	£12.95 (disc)
HOME/BUSINESS		
Superscript Word processor	£90.00	£59.95
Typesetter	£34.95	£29.95
Homeword (Sierra word processor)	£48.95	£40.95
Mag pilots	£26.95	£23.15
Datebyte Graphics Art Dept.	£29.97	£24.95
Home Filing Manager (disc)	£24.98	£14.95
C.B.C. Discs (SS/DD) 10 in box		£13.95
Memorex Discs (SS/DD) 10 in box		£10.45
Blank Cassettes C10 or C20		£5.50
U.S. Doubler	£14.90	£40.90
Joysticks	£9.00	£7.00
Joystick (inserts (repair kit))		75p each
Paddles	£9.00	£8.00

To [illegible] range of Books, Manuals and Business interfaces and Leads [illegible]

[illegible]

All subject to availability. All prices inc VAT. P&P on a phone enquiry

116 EDLESTON ROAD, CREWE, CHESHIRE 0270-214118

STOCKSOFT

ATARI ONLY *MAIL ORDER ONLY

1050 DUPLICATOR
Based on a 6502 chip is a replacement board for your 1050 drive. Easy 5 minute installation compatible with both XL and XE. Gives – read and write to R/sectors custom formats double sectors also true double density and turbo-drive giving up to 18 times faster read and write. Comes complete with all hardware software fitting instructions. **£199** Rush your order now! Or send large S.A.E. for further information

DIGIT
Latest in technology. Digitised pictures of real places faces and more. All in colour on a double sided 48k disk at only **£10** post free.

XE130 – PICTURE SHOW
Side A
Loads 128k into RAM
Re Move Disc – giving a continuous display of computer art
Side B
Fantastic Graphic Demo
Comes on 128k.
Double sided Disc
Only **£10** post free

XL FIXER
Will allow you to play games written for 400 800 on your XL or XE. Tape version **£8**, disk version **£10**. Post free 48k.

XE 130 DISK DUPE
Uses all 128k, copies disk in 1 pass. No more changing disks – will not copy disks protected by bad sectors. 128k. Disk only **£10** post free

TAPE CRACKER – REV 2 – 48k
SIDE A Will list M/C progs to screen you edit download your personalised version with or without M/C knowledge. Hours of fun changing text to leave personal messages on screen. Stuck on an adventure search for clues.
SIDE B For the advanced user contains a disassembler. All this for only **£10** on T.D.K. tape post free

DISK UTILITY PAC No. 1
4 disk pack with over 60 progs for beginners or advanced works out at less than 50p a program. Power without the price. Comes on two double sided disks
£25 post free

For details of our other unusual utilities also game packs with games for only £2 each send large SAE TO

STOCKSOFT
15 Woodbrooke Road, Birmingham B30 1UE

NORTH EAST MICRO COMPUTER SHOW

TO BE HELD AT

CROWTREE LEISURE CENTRE
SUNDERLAND

FROM Saturday 26th April, 1986
Sunday 27th April, 1986

This is the first North East Micro Computer Show for both the businessman and the home enthusiast. A chance to see/buy and have demonstrated all the popular micro computers with their add-ons and software

- * Amstrad * Atari * BBC (inc. the new master series)
- * Commodore * Electron * Spectrum
- * many others!

Many new products "HOT OFF THE PRESS" games will be available

You cannot afford to miss this opportunity to attend a show being held in the busiest Leisure Centre in England

AVOID QUEUING and SAVE 25%
BY
BOOKING IN ADVANCE

Advance Booking Voucher

Please send S.A.E.
No. of Adults........ No. of Children........
Name
Address

Please tick preferred day
Saturday ... Adult £1.50
Sunday Child £1.25 (under 14)

Post Code TOTAL ENCLOSED £
Tickets at the door Adult £2.00 Child £1.50
Send cheques/postal orders to VIVAFORCE Ltd.
72 Durham Road, East Herrington, Sunderland Tyne & Wear AT6
For further information please contact our show office on (0783) 671170

STRATEGIC PLUS
SOFTWARE

SPECIALISTS IN QUALITY COMPUTER GAMES FOR THE DISCERNING GAMER

STRATEGY ADVENTURE AND SPORTS GAMES FOR THE ATARI 800 SERIES AND ATARI 520ST COMPUTERS

Send for our free 20 page 85/86 catalogue which has a large selection of titles with descriptions and complexity ratings for each game

All gamers who place orders or receive our catalogue will be eligible for our quarterly newsletter updating our catalogue and keeping you in touch with up and coming titles.

NEW TITLES NOW IN

ATARI 800 Series: Star Fleet I – Sci-fi role playing game £43.00
Ultima IV £49.00
ATARI 520ST: Sundog – Sci-fi role playing game (col. monitor req.) £35.00

Atari 800 XL, XE
STRATEGY/WARGAMES

Battle in Normandy	£35.00
Panzer Grenadier	£35.00
Armistice	NEW £40.00
U.S.A.A.F.	NEW £40.00
Kampfgruppe	£45.00
Colonial Conquest	£35.00
Chickamauga	£31.00
Napoleon in Waterloo	£31.00
Crusade in Europe	£36.00
Colors of War	NEW £35.00
Silent Service	NEW £25.00
Kampfgruppe Scenario Disc NEW	£18.00

SPORTS

Computer Baseball	£30.00
Computer Quarterback	£30.00
Micro League Baseball	£35.00

All Programs are on Disc only

Call us on
01 979 2987

Or write to
Strategic Plus
Software, P.O. Box 8
Hampton, Middlesex
TW12 3XA.

Business Hours
10am-5pm Mon-Fri.
11am-4pm Sat.

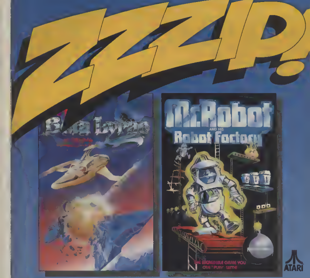
Please make cheques payable to
Strategic Plus
Software.

Interactive Fiction games from INFOCOM
Atari 800 XL, XE + Atari 520ST

Brat or all Atari 520ST	£35.00
A Mind Forever Voyaging (520ST only)	£30.00
Cutthroats	£30.00
Deadline	£30.00
Enchanter	£30.00
Hitchhikers Guide to the Galaxy	£30.00
Infidel	£30.00
Planetfall	£30.00
Seastalker	£34.00
Sorcerer	£30.00
Starcross	£34.00
Suspect	£30.00
Suspended	£30.00
Wishbringer	£30.00
Witness	£30.00
Zork series I II III	EACH £30.00

All prices include Postage and Package + VAT

2 GAMES TO GIVE YOUR ATARI



THE TAIL OF BETA LYRAE will amuse and amaze you for many months to come. Why? Because it CHANGES as time goes by. So you'll never get bored. There's even original toe tapping finger snapping music to entertain you while you play.
Commander
A nomadic race of ALIENS has taken over the mining settlements on the tail of the double star Beta Lyrae. Your mission, as a Wing Commander, is to destroy the Alien surface installations and force their retreat from the planets within The Tail of Beta Lyrae.
Cassette £9.95 Disc £14.95

Get ready for a new experience in computer gaming. As Mr Robot you thrill to the excitement of jumping over alien fire, running over treadmills and bombs, climbing ladders and escalators, sliding down poles, bouncing off trampolines and transporting yourself through thin air. Then — when you've mastered all 22 screens and can play MR ROBOT blindfolded — you can use the ROBOT FACTORY and design your own screens! Any way you like! Up to 26 of them! You'll be having so much fun you may forget you're human!
Cassette £9.95 Disc £14.95

Available from all good computer software stores or post free from
Databyte 15 Wolsey Mews Kentish Town, London NW5 Telephone 01-482 1755

FOR ALL ATARI COMPUTERS: 400/800/XL/XE WITH MIN 48K RAM

DATABYTE

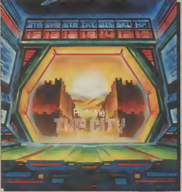
Mr Robot and The Tail of Beta Lyrae are trademarks of Datamost Inc. ©1983 Datamost Inc. Distributed by Databyte under licence from Datamost [illegible]

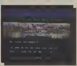
THE NEW DIMENSION IN ROLE PLAYING FANTASY…

alternate REALITY

AMERICA'S ATARI GAME OF THE YEAR

PART ONE IN A SERIES OF SEVEN EPIC ADVENTURES





• 3D SCROLLING SCREENS • COMBINED JOYSTICK AND KEYBOARD ACTION • ORIGINAL MUSIC

Kidnapped by an alien spaceship you find yourself in a room with only one exit. Through this opalescent doorway is The City of Nebec's Demise. Overhead is a panel displaying constantly changing numbers. At the moment you pass through the numbers freeze. Whatever levels of Stamina, Charm, Strength, Intelligence, Wisdom, Skill and Wealth you begin your adventure with are determined at this point.

Mystery and danger await you in the maze of streets. Be wary, not everyone is friendly! Eat and drink in taverns where clues are often found in the hearty songs you hear. Battle deadly enemies, uncover marvelous treasures and learn dark secrets.

The sun sets and rises, rain falls and secret doors lead you into unexpected perils. You must improve yourself physically, mentally, morally and financially in order to reach your goal, return to Earth or seek revenge on your abductors.

U.S. Gold Limited, Unit 10 The Parkway Industrial
Centre, Heneage Street, Birmingham B7 4LY
Telephone 021 359 8881 Telex 337268

Datasoft

Datasoft is a registered trademark of Datasoft Inc. Alternate Reality is a registered trademark of Paradise Programming Inc. © 1985 Philip Price © 1985 Datasoft Inc. All rights reserved.

Vol. 1 No. 2
April 1986

Atari ST User

ATARI SM124

- *A powerful new language for the ST: Modula-2 reviewed*
- *Race is on to produce 'compact disc' sound on the ST*
- *Making the most of GEM: more expert hints and tips*

SOFTWARE FOR THE ATARI ST

METACOMCO PRESENTS ITS NEW RANGE OF SOFTWARE FOR THE ATARI ST: A SET OF POWERFUL PROGRAMMING LANGUAGES FOR PEOPLE WHO WANT TO WRITE PROGRAMS FOR THE ST.

▶ MACRO ASSEMBLER

£49.95

A high specification macro assembler, complete with linker and screen editor. Assembler is a fundamental language, useful for all kinds of programming - particularly where speed and compactness are important. Essential for all serious programmers who want to exploit the ST's full potential.

▶ MCC PASCAL

£89.95

A powerful Pascal compiler designed to meet the exacting ISO standard. This Pascal is already widely used on the Sinclair QL and the Commodore Amiga. A fast, single pass compiler, generating native code. Full interface with GEMDOS libraries allows windows, icons, menus, etc. to be programmed using Pascal. Complete with screen editor and an extensive user manual.

▶ LATTICE C

£99.95

The well known Lattice C compiler: a full Kernighan and Ritchie implementation with comprehensive libraries of UNIX and utility functions and including a complete interface to GEMDOS features. C is the ideal language for program development.

ALL METACOMCO'S LANGUAGES FOR THE ATARI ST INCLUDE METACOMCO'S POPULAR SCREEN EDITOR, AND A DETAILED MANUAL.

▶ Metacomco are leading suppliers of systems software for 68000 based microcomputers. As well as these titles for the Atari ST, Metacomco have a very successful range of programming languages for the Sinclair QL, now widely used throughout the world. Metacomco was also chosen by Commodore to provide the operating system and a suite of languages for the new Amiga computer.

METACOMCO

26 PORTLAND SQUARE, BRISTOL BS2 8RZ, UK
TELEPHONE BRISTOL (0272) 428781
In the USA call 1 800-252-6382

Lattice is a trademark of LATTICE INC. GEMDOS is a trademark of DIGITAL RESEARCH INC. UNIX is a trademark of AT&T Bell Laboratories. Prices include VAT and P&P UK mainland only. Delivery is up to 28 days.

PHONE TODAY OR POST THIS COUPON TO METACOMCO, 26 PORTLAND SQUARE, BRISTOL BS2 8RZ

PLEASE SEND ME

MACRO ASSEMBLER £49.95 ☐
FOR THE ATARI ST
MCC PASCAL £89.95 ☐
FOR THE ATARI ST
LATTICE C £99.95 ☐
FOR THE ATARI ST
MORE INFORMATION ☐

SIGNATURE ____________

I ENCLOSE A CHEQUE FOR £ ________ OR DEBIT
MY ACCESS/VISA NO ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

CARD EXPIRY DATE ____________
NAME ____________
ADDRESS ____________
POSTCODE ________ TEL. NO ________

AU4

Megabyte ST released in UK

MIKE COWLEY reporting

ATARI S Big One – the one megabyte ST – has finally taken its bow in the UK and so too has its baby brother the cut price version of the 520ST the 520STM

The news of the twin launch was greeted by rival manufacturers with all the enthusiasm of the local hard man finding himself matched against Frank Bruno and Barry McGuigan at one and the same time For at their respective levels the 1040ST and the 520STM are likely to prove to be knock out specialists

Weighing in with one megabyte of memory the 1040ST appears to be in a class of its own at the moment in the micro heavyweight division It comes with a built-in one megabyte disc drive, mouse integrated operating system internal power supply and choice of either a 12in black and white high resolution or 14in colour monitor

And Atari has given it that extra Rambo quality by fixing its price at less than £1 000 This isn t just going to knock them over it s going to leave them for dead snarled an Atari spokesman with all the venom of a cigar chewing boxing promoter

If that wasn t enough the Jack Tramiel training camp has thrown up at the same time the 520STM the machine they predict is set to become the people s champion in the 16 bit market

A stand alone computer it is really the unbundled version of the 520ST with built in operating system mouse and internal modulator

Though the price of this little bruiser had still to be fixed as we want to press – the weakness of the dollar forcing last minute revision of calculations – it is expected to flex its muscles in the region of £300

Megabyte ST

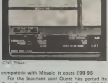
★ ★ ★

REPORTS from West Germany say that Atari is working on a Unix system and a co processor unit for the ST series German news agency CW Communications quotes Atari executives as confirming development of a 32 bit co-processor extension incorporating a 32-bit Motorola chip and having a 2mbyte – expandable to 4mbyte – onboard Ram

The co-processor unit is expected to make its debut later this year with the Unix version of the ST entering the market in 1987 Informed sources close to Atari have been quoted as saying that the unit will cost between $500 and $600

★ ★ ★

TWO new software packages for the 520 ST have been announced by Quest International Computers The Philon Fast Basic-M and Compiler offers programmers the facility to port existing applications to the Atari Basic M being compatible with Mbasic It costs £99 95



Cash Trader

For the business user Quest has ported its Cash Trader program to the ST Priced £99 95 the software offers windows for entering reporting and help screens

★ ★ ★

WORLDWIDE distribution of Atari ST software has been undertaken by Activision who intend using their vast network to markedly increase the company s base Versions of two of their titles Hacker and Mindshadow will shortly be out for the ST

ATARI
SM124
ATARI
SF354
ATARI

THE 520ST. OVER QUAL

AVON [illegible]
Computer Business
AVON BRISTOL
Laskys
AVON BRISTOL
Radford Hi Fi
BEDS BEDFORD
Bedford Computers
BEDS LUTON
Hobbyte Ltd
BEDS LUTON
Laskys
BELFAST
CBM Micro Computer Services Ltd
BELFAST
Computer All Ltd
BELFAST
Education Company Ltd
BELFAST
Ideal Radio
BELFAST
NPO
BERKS READING
HMV Music Shop
BERKS READING
Laskys
BERKS SLOUGH
Laskys
BERKS SLOUGH
Silicon Chip
CAMBS CAMBRIDGE
Cambridge Computer Store
CAMBS CAMBRIDGE
Laskys
CAMBS PETERBOROUGH
Laskys
CENTRAL FALKIRK
Microslave

CHESHIRE [illegible]
Laskys
CHESHIRE [illegible]
Woolterb TV
CHESHIRE WARRINGTON
Warrington A1 Computers
CHESHIRE [illegible]
Parkhurst Instruments Ltd
CLWYD WREXHAM
[illegible]
CLWYD WREXHAM
[illegible]
CO. DERRY
[illegible] Brothers
CO. DOWN WARRENPOINT
[illegible] Video
CO. DURHAM
DARLINGTON
Darlington Computer Shop
DERBYSHIRE
CHESTERFIELD
F.A.W. Electronics
DEVON EXETER
Laskys
DEVON PLYMOUTH
Laskys
DEVON PLYMOUTH
[illegible] Ltd
DORSET BOURNEMOUTH
Lansdowne Computer Centre
DORSET POOLE
Lansdowne Computer Centre
ESSEX COLCHESTER
Colchester Computer Centre
ESSEX COLCHESTER
[illegible] Computers
ESSEX COLCHESTER
Laskys

ESSEX [illegible]
[illegible]
ESSEX HARLOW
Laskys
ESSEX ROMFORD
Laskys
ESSEX SOUTHEND
Laskys
ESSEX SOUTHEND
Estuary Computers
ESSEX WESTCLIFF ON SEA
[illegible] Resources
FIFE GLENROTHES
Computer Services Scotland Ltd
GLOUS CHELTENHAM
Laskys
GLOUS GLOUCESTER
Laskys
GRAMPIAN ABERDEEN
Laskys
GRAMPIAN ABERDEEN
Microstack
GT MANCHESTER BOLTON
Computer Annex
GT MANCHESTER
[illegible]
Mighty Micro
GT MANCHESTER
MANCHESTER M4
Laskys
GT MANCHESTER
MANCHESTER M1
Laskys
GT MANCHESTER
MANCHESTER
Lewis's Ltd (Sound & Vision)
GT MANCHESTER
MANCHESTER
NSC Computer Shops

GT MANCHESTER [illegible]
[illegible]
MERSEYSIDE [illegible]
Lewis's Ltd (Sound & Vision)
GWENT [illegible]
Computa[illegible]
HANTS PORTSMOUTH
Microchoice
HANTS SOUTHAMPTON
AMS Systems Limited
HANTS SOUTHAMPTON
Laskys
HERTS ST ALBANS
Hobbyte Ltd
HERTS WATFORD
Laskys
HIGHLAND [illegible]
[illegible]
HUMBERSIDE HULL
[illegible]
HUMBERSIDE HULL
Tomorrow's World
KENT BECKENHAM
Transform Ltd
KENT BEXLEY HEATH
Laskys
KENT BROMLEY
Laskys
KENT MAIDSTONE
Kent Microcomputers
KENT MAIDSTONE
Laskys
KENT ORPINGTON
Lowe Computers
KENT SEVENOAKS
[illegible] Computers &
Office Supplies
KENT SWANLEY
[illegible]

KENT [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
LINCS [illegible]
[illegible]
LANCS [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
LEICS [illegible]
[illegible]
[illegible]
[illegible]
LEICS [illegible]
[illegible]
[illegible]
[illegible]
LONDON [illegible]
[illegible]

LONDON NW4 [illegible]
LONDON [illegible]
Laskys
LONDON W1 EALING
Laskys
LONDON W1 [illegible]
Micro Masters Ltd
LONDON W1 [illegible]
LONDON W1 Laskys
LONDON W1 Laskys
LONDON W1 [illegible]
LONDON W1 [illegible]
LONDON W1 [illegible]
LONDON W1
[illegible]
LOTHIAN EDINBURGH
[illegible]
LOTHIAN EDINBURGH
[illegible]
LOTHIAN EDINBURGH
The [illegible] Ltd
MERSEYSIDE [illegible]
Laskys
MERSEYSIDE [illegible]
[illegible]
MERSEYSIDE [illegible]
[illegible]
MERSEYSIDE [illegible]
[illegible]
MIDDLESEX [illegible]
[illegible]
MIDDLESEX [illegible]
Laskys
MIDDLESEX [illegible]
[illegible]

THE ATARI 520ST Personal Computer has a list of qualifications as long as your arm. With a powerful 16 bit processor and 512k of memory linked to high resolution graphics and 512 colours its work is fast, clear and sharp on your screen, no matter how demanding the task.

Controlling the 520ST is easy through its mouse and unique operating system incorporating GEM desk top manager, whilst its eleven peripheral connectors including MIDI interface enables it to mix and communicate easily witb otber computer products

The ST which presents itself in smart modern styling comes with powerful BASIC

L IFIED AND UNDERPAID.

[illegible]

plus Logo programming languages, a word processor and drawing programme, yet costs only £652* including disc drive and black and white monitor.

Why? Because at Atari we bring up our products to work hard for their living.

ATARI®
Power Without the Price™

*This price is inclusive of VAT
GEM ™ is a registered trademark of Digital Research

Changing mice and pausing programs

Send your ST queries to:
ANDREW BENNETT,
Atari ST User,
Europa House,
68 Chester Road,
Hazel Grove,
Stockport
SK7 5NY

THIS month I've selected three routines from the other half of the ST's Gem operating system, following our look at the ST's built-in virtual device interface routines in last month's column.

Unfortunately the applications environment services (AES) is mainly concerned with the ST's window and menu capabilities. Basic is far too slow to cope with their control.

Perhaps when a Basic compiler comes on to the market I will take another look at the AES routines and see which are usable from Basic using the compiler.

To access the ST's AES you must use the GEMSYS(X) command, which is sparsely described on page C-57 of the ST's Basic manual. You must replace the X in the brackets – the parameter – with the routine's op-code.

The first routine that I have chosen from the AES manual allows you to change the shape of the mouse from within your programs. The op-code for this routine is 78 and you must poke the required shape (see Figure I) into GINTIN. There are eight shapes available including the busy bee and various types of cross hair. The demonstration program, Program I, shows exactly how it's done.

Program II lets you pause the program while waiting for any key to be pressed. The op-code is 20 and the demo program should give you all the details that you need.

The last of this month's routines, Program III, will pause the program for a set number of milliseconds, up to a maximum of 60 seconds. Its op-code is 24 and you must poke the number of milliseconds into GINTIN before calling the routine. The third demonstration program pauses for 10 seconds.

```
[illegible]
```

Program I

```
[illegible]
```

Program II

```
[illegible]
```

Program III

```
10    FULLW 2 : CLEARW 2
15    Z=0
20    FOR A=0 TO 72
30    GOTOXY A,Z:? "X"
40    NEXT A
50    Z=Z+1:IF Z=18 THEN END
60    GOTO 20
```

Program IV

```
10    FULLW 2 : CLEARW 2
15    Z=0
20    FOR A=72 TO 0 STEP -1
30    GOTOXY 0,Z
35    ?TAB(A) "X"
40    NEXT A
50    Z=Z+1:IF Z=18 THEN END
60    GOTO 20
```

Program V

Problems, problems

The first comes from A. Kassell of Plymouth who is having problems with his copy of Doodle.

When you select the Save option to save a screen to disc, Doodle requests that you type in a filename. This filename must be entered in upper-case – use either shift or shift-lock – and must end with .DOO so that Doodle can load it at a later date. If this doesn't work you probably have a bad copy and should return it to the shop for replacement.

David Thomson of Paisley is having problems finding an RS232C lead for his Brother HR5 printer and N. Judge from Ashford finds it difficult to connect his Granada RGB monitor/TV to his ST. Leads for both of these can be had from Silica Shop (01-309 1111). The monitor cable is order number STA6700 and the printer lead is number STA7700. Each costs £19.95. Make sure that Silica Shop will allow you to return

Number	0	1	2	3	4	5	6	7	256	257
Cursor	Arrow	Text cursor	Busy bee	Hand with pointing finger	Hand with extended fingers	Thin cross hair	Thick cross-hair	Outline cross hair	Mouse off	Mouse on

Figure I Available mouse cursor shapes

these general purpose cables if they don t work with your particular set up

Richard Chelcraft of Worthing has discovered a bug in the ST s Basic The problem lies in Basic s GOTOXY command Program IV illustrates the problem perfectly The Xs generated by the program are supposed to be next to each other The problem is that GOTOXY doesn t use the correct X coordinate This makes positioning difficult

The only solution that I have been able to find is using the TAB function instead of the X coordinate The main problem with this method is that TAB writes over characters to the left of the cursor with spaces Therefore you have to place characters on the screen from right to left Program V shows this solution

Several of you have complained of the lack of software for the ST This is a perennial problem When new machines become available they invariably have little or no software

At this stage the only people who should buy them are computer freaks like myself who can have fun using a computer without necessarily being able to do any useful work with it

Often however people who want to do some work with their machine are pulled in by the hype and buy a machine that has very little software actually on the shop shelves

The 520ST – and the Apple Macintosh before it – suffered heavily from this The ST might be one of the easiest computers to use with its mouse menus and windows but it s difficult to get to grips with it from a programmer s point of view

This means that the first few programs that have appeared have not used the Gem interface and have looked like they were running on a keyboard based IBM rather than a mouse based ST It has taken several months for the software companies to come to terms with the ST

Hopefully by the time you read this good quality software will begin to appear in quantity Programs such as Batteries Included s DEGAS show what can be done If your enthusiasm for your ST has waned during the last few months now is the time to restoke your fires and come out fighting armed with your ST

With the announcement from Atari of new ST machines on the way Mr Kowal of Malton Mowbray is wondering whether or not to wait before buying an ST

Last month in *Atari ST User* we told you that Atari has announced a 1mbyte version of the ST (1040ST) for $1 000 B&W or $1 200 for colour and a TV modulator version of the 520ST for about $400 The current ST package sells in the States for $800 B&W and $1 000 colour This means that the 1040ST is likely to cost £850 B&W and about £1 050 colour and the modulator 520ST will probably cost around £350 (without a much needed disc drive)

I don t think the basic modulator version will ever arrive in the UK but the 520ST FM is much more likely with its built-in drive The 520ST FM will probably cost around £450 The present 520ST will probably drop in price to around £600 for B&W

Should you buy now or wait? First ask yourself whether or not you need 1mbyte of memory The newer 520STs will have Gem in ROM and therefore have about 450k for programs Only software developers and large businesses will need 1mbyte of memory

My advice is to wait until the new machines arrive remembering that the 520STM is probably a non-starter and then buy the machine that you think most suits your needs

You ll be able to add a monitor to the modulator STs if you should wish to The B&W monitor costs around £150 and the colour around £400 If you should wish to upgrade to 1mbyte at a later date several companies are about to offer upgrades for the 520ST for about £150

● *That s it for now Next month I ll be answering your problems and detailing my adventures at the Atari User Show In the meantime I d like to hear your opinions on the new ST machines*

HINTS

● The file selection section of most ST programs is easy to use You simply point at the file that you want and then click on OK The only problem arises when your file is on a different disc from the program

To read in the directory of another disc is quite easy After the file selection box comes up on the screen change the disc in the drive and then click once on the top of the small window which contains the file listing The new disc s directory will now be read in

You must always use this method when changing discs as changing discs without rereading the directory might lead to your discs being corrupted and unusable

● The latest batch of free software from Atari comes on three discs If you take a careful look at them you will notice that Megaroids Doodle and DBMaster could easily fit on to one disc If you move Megaroids and Doodle on to the DBMaster disc you can then erase the Megaroids/Doodle disc and Atari has supplied you with a free blank disc

● If you are having problems with STWriter I recommend that you transfer to the new Atari word processor FirstWord It s far easier to use and can also be used to edit Basic and C programs

LADBROKE COMPUTING for ATARI
INTERNATIONAL

DIRECT AMERICAN IMPORT'S FROM OUR U.S.A. BRANCH
PLUS
BULLETIN BOARD WITH PUBLIC DOMAIN DOWNLOAD SOFTWARE

WHILE STOCKS LAST!
When you purchase a 520 ST from us
FREE accommodation for 2 for up to 17 nights
in a selection from 60 hotels
All you have to do is pay for your meals
and ENJOY YOURSELVES

All dedicated
magazines in stock
- Page 6
- Atari User
- Antic
- Analog

HARDWARE
- Full XL range
- 130 XE's
- 520 ST's
- Epson printers
- Interfaces * Modems

Full supporting peripherals
Full service support etc

SOFTWARE
If it's available,
we have it !!!
- Arcade
- Adventures
- Educational
- Utilities

All latest titles

Ring us last &
check our prices
Out of office hours,
check our bulletin board
for latest imports direct
from our USA branch

33, ORMSKIRK ROAD
PRESTON
LANCASHIRE
PR1 2OP
TEL: (0772) 21474

MAIL ORDER (0772) 27236 10.00am – 6.00pm
BULLETIN BOARD (0772) 27236 6.00pm – 9:00am

VISA & ACCESS WELCOME

Modula-2 for compact code

Sol Guber reviews a high level language for a high tech micro

A GOOD computer needs good languages to utilise all of its capabilities. The Atari 520 ST is one of the newest and best computers on the market today. Now TDI, a British software company, has released Modula-2 for the ST, and it is a fine example of what a good language should be.

First let me explain what Modula 2 is for those that have not heard of it yet. Niklaus Wirth, the inventor of Pascal, also invented Modula 2. The language is an addition to Pascal and has these five added features:

- The module concept and in particular the facility to split a module into a definition part and an implementation part
- A more systematic syntax which facilitates the learning process. In particular, every structure starting with a keyword also ends with a keyword, so is properly bracketed
- The concept of process as the key to multi-programming facilities
- So called low-level facilities which make it possible to breach the rigid type consistency rules and allow you to map data with Modula-2 structure onto a store with inherent structure
- The procedure type which allows procedures to be dynamically assigned to variables

TDI's Modula-2 compiler implements the full Modula-2 language as described by Wirth. It includes separate compilation, opaque types, co routines (pseudo-concurrent processes) and floating point routines. It is integrated into the Gem environment and will support all the Gem routines. It also promises to make compact code.

As in all high level languages the Modula 2 package comes in three parts – an editor, a compiler and a linker in a two disc package. There is no copy protection on any of the discs and you can arrange the system to fit your convenience. A good demonstration of the power of Modula-2 is included. Since most programmers do not spend much time with either the compiler or the linker, the editor is the most important part of the package. This one is very user friendly and powerful.

The full screen editor uses both the mouse and the function keys. You can point the mouse to the spot where you want to work and click it. This will be the new spot where writing begins. Using the function keys you can move one word right or left, page up and down, and move a line up and down.

The arrow keys are also used to move around the screen. The deletion function works similarly as the movement functions with the ability to delete character right or left, word right or left, or line right or left. You can undelete with the Undo.

For large insertions or deletions you can Mark and Cut or Paste text into the proper spot. These abilities are usable both with the mouse and drop down menus, as well as using the function keys.

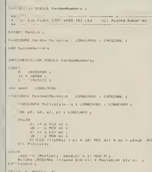
One more function is unique to this editor. After a program is written it is compiled. Most of the time there are errors in the compilation and with this compiler the errors are written to a file on the disc. When you return to the editor the error file and your original file are combined so that there are little @s where the errors occurred.

All the errors in the program are examined. There is even a special function key for looking for the next @. When the cursor is moved to this spot a message will be shown at the bottom of the screen with the error number. The error number can then be looked up in the table in the Modula-2 book.

There are four pages of possible errors and they are well defined so it is easy to correct them and continue. This listing of the error messages in a file that is merged into your file shows the time and effort that went into making this fine package. The editor was, of course, written in Modula-2.

Figure 1 shows a sample program in Modula-2 and you can see the various differences between it and Pascal. Firstly there are two parts to the program, a definition module and an implementation module. There is a difference between what a procedure does and what the outside world sees of the program. You must define what will come out of the module

→



```
DEFINITION MODULE RandomNumbers ;

(*--------------------------------------------------------*)
(*  Copyright 1985 1985 TDI Ltd    All Rights Reserved   *)
(*--------------------------------------------------------*)

EXPORT Random ;

PROCEDURE Random(MaxValue : LONGCARD) : CARDINAL ;

END RandomNumbers.


IMPLEMENTATION MODULE RandomNumbers;

CONST
    M = 100000000 ;
    m1 = 10000 ;
    b = 31415821 ;

VAR seed : LONGCARD;

PROCEDURE Random(MaxValue : LONGCARD) : CARDINAL ;

    PROCEDURE Multiply(p, q : LONGCARD) : LONGCARD ;

     VAR p0, q0, p1, q1 : LONGCARD ;

    BEGIN
         p1 := p DIV m1 ;
         p0 := p MOD m1 ;
         q1 := q DIV m1 ;
         q0 := q MOD m1 ;
         RETURN (((p0*q1 + p1) * q0) MOD m1) * m1 + p0*q0) MOD M;
    END Multiply;

BEGIN
    seed := (Multiply(seed,b) + 1) MOD M ;
    RETURN CARDINAL(((seed DIV m1) * MaxValue) DIV m1) ;
END Random ;

BEGIN (* MODULE *)
   seed := 749887 ;
END RandomNumbers.
```

Figure 1 Module-2 sample program

and in this case a CARDINAL number will the EXPORTed from the module

A second difference is in the fourth from last line The language uses very strong typing To return a CARDINAL number from a function that uses a division between LONGCARDs you must specify that the CARDINAL number is returned All procedures and parameters must be typed so that the program will know what type of variable it is

There are several subtle points in the example module shown in Figure 1 One not seen is what can be done with this module First it can be compiled and when needed by any other program it can be IMPORTed into that program Modula-2 unlike Pascal can link together compiled code using the linker This means that a library can be put together and used just like any other function

A second point is the interface between parts of the programs The Definition module explains exactly what another part of the program will see of the Implementation module The only thing seen by the outside environment is the procedure Random since it is the only thing that is EXPORTed out

Variables variable types and other procedures can also be EXPORTed out Objects declared in other modules can be referenced in module M if they are explicitly made to be known in M They are IMPORTed into M

The major strength of Modula-2 is that many parts of the program are hidden from other parts It makes it easy to write and debug parts of programs since you know exactly how they will fit together as this has to be specified in the definition portion of the module Also the fine details of a system do not need to be known at any higher level

The same program can be written for two different machines and each machine will have specific I/O that will be IMPORTed when needed In terms of I/O you may just wish to have them available but do not need to know – or rather do not wish to bother to learn – how this works in detail In many cases you may even wish to hide parts away from access to guarantee that they will work correctly

There are several extensions to Modula-2 proposed by Wirth They include a change in the CASE syntax a new variable type called String and two new variables for 32 bit machines called LONGCARD and LONGINT There is optimisation for Boolean constants The Set type is supported by several new features Also you are allowed to have open array parameters

The most exciting part of the language is the combination of high level and low level implementation For the low level portion there is a procedure CODE which allows for the insertion of machine language into the object code There is SETREG to put values into one of the 68000 processor s registers as well as REGISTER to return values

On the high level end there is the TYPE PROCESS as well as procedure NEWPROCESS There is IOTRANSFER to move to different peripheral devices as needed and procedure LISTEN for the interrupts servicing The NEW PROCESS is used to produce concurrent programming

In all the time I ve been using this language I have found no bugs at all There are some typos in the documentation but none of these are significant I have typed in several of the programs from Wirth s book Programming in Modula 2 and they have worked perfectly

The major weakness of the package is in the documentation of the Gem routines in the manual It is expected that the Gem manuals be purchased and read Without them many of the Gem routines can not be used properly

Except for this one flaw I have no qualms recommending this language to anyone It is a good way to move away from DRI s C

TOP QUALITY DISCS AT COMPETITIVE PRICES FROM 79p

3½" Nashua Microdiscs

	Per Box of 10	+ 10 Boxes
SS/DD 135tpi	£21.74	£20.00
DS/DD 135tpi	30.40	28.00

Authorised Nashua Distributor

5¼" Nashua Floppy Discs
Lifetime Guarantee

	Per Box of 10	+ 10 Boxes
SS/DD 48tpi	£11.00	£10.00
DS/DD 48tpi	15.00	14.00
SS/DD 96tpi	16.00	15.00
DS/DD 96tpi	18.00	17.00
1.6M 96tpi	40.00	38.00

5¼" Own Label
Floppy Discs in Library Case
Lifetime Guarantee

	Per Box of 10	+ 10 Boxes
SS/DD 48tpi	£7.90	£7.50
DS/DD 48tpi	10.00	9.50
DS/DD 96tpi	13.90	13.00

Micro Resources Limited
Southfield House 11 Liverpool Gardens
Worthing Sussex BN11 1RY
Worthing (0903) 213174

Special prices for Software Houses
from 75p per disc in bulk packed form
Send payment or phone to use credit card
Large quantity and Education Discounts given
All prices include delivery please add VAT at 15%
Trade enquiries welcome, send for dealer price list

Atari 520ST

Write GEM software for your Atari 520ST NOW!

TDI present TDI Modula-2/ST, the only Modula-2 compiler for the Atari 520ST Accessed through Atari GEM icons and driven by mouse, icons or keyboard input

TDI Modula-2/ST **£99.95**

The package: TDI Modula-2/ST comes complete with its own screen editor, linker and friendly GEM illustrated manual

Speedy error detection: The compiler is integrated with the editor in such a way that all compilation errors are stored and displayed one after another on the screen for the programmer to correct

Write GEM programs: The full GEM interface and graphics are supported by TDI Modula 2/ST GEM software can be developed with windows, mice, menus and graphics

Advanced user friendly language: TDI Modula-2/ST is the logical development of the Pascal language, (Pascal programmers will take only a few days to adjust) It is a highly productive language producing fast, quality 32 bit native code

TDI, 29 Alma Vale Road, Bristol BS8 2HL.
Telephone (0272) 742796

Prices include VAT and P&P
Allow 28 days delivery

Post this coupon to: TDI Ltd, 29 ALMA VALE ROAD, BRISTOL BS8 2HL

Please send me ____ copies of TDI Modula-2/ST
Please tick credit card type
VISA/Barclaycard ☐
ACCESS ☐
Diners Club ☐
Dept AU 4

I enclose a cheque for £________ or debit card ________
Card Expiry Date ________
Name ________
Address ________
____
Postcode ______ Telephone ______

GEM is a trademark of Digital Research

The Ultimate Communications Package incorporating COLOUR PRESTEL

MEGATERM

by Sunsoft Systems ...

Read this and see if you agree that MEGATERM is the best terminal programme available anywhere.

Megaterm consists of a modem adaptor for any modem a very comprehensive manual and a terminal programme written completely in assembly language It is available on disk or cassette

The programme has the following features Colour Prestel (available in Australia since July 1985) the ability to save screens review screens at a later date as well as the ability to do text or graphics printer dumps of screens Telesoftware download capability is supported as is automatic log-on to Prestel and the colour may be toggled off or on

You may have a choice of full or half duplex five parities and six baud rates up to 9600 bps ASCII and EBCDIC translation modes and wordwrap are available Disk options (supporting drives 1 to 8) include directory rename lock unlock format and copy file which supports single and multiple drive copies (options 0 and C of DOS) Copy file also supports wild cards and the append function

The programme has a complete implementation of XModem file transfer protocol including block checking and supports all the baud rates including 1200/75 and 75/1200 bps Bootsectors up to a full disk may be uploaded or downloaded as opposed to files

A comprehensive set of macros is available Macros can be defined or altered in the Macro Edit screen and saved or loaded from disk Any one of ten macros may be sent at any time in Terminal mode by a single keystroke Macros can be up to 64 characters long and may be chained to give one macro of up to 640 characters The screen colours and text intensity are alterable and should you not like our default values you may change the values e g baud rate parity translation mode colours etc and save to a configuration file At the next power-up your new default values will be installed Configuration file also saves the ten macros in use at that time

It is possible to invoke a split screen off line editing screen with independent scrolling The programme also supports variable margins delay rates reconfiguration of your printer for graphics dumps and full error messages in decimal The menu screen windows all present parameters

Every terminal screen shows the translation type condition of Memstore (capture) buffer, a resettable real time clock number of bytes left in the buffer and the resettable elapse time All these values are shown independent of the scrolling ability of the screen You may review any data in memory or any file from disk at any time

The available buffer is 17 000 bytes (compare this with other programmes) and the programme supports the RAM disk of the 130XE allowing an effective increase in the buffer size of 64K for the XE File transfers longer than memory are possible as well as protection of data in the Memstore buffer during file transfers Forced breaks may be sent at any time in terminal mode and terminal screens are not cleared when moving to and from the menu screen

Sunsoft Systems has a replacement policy for damaged disks and offers updates at nominal costs to registered owners There is a three months guarantee on the adaptor

Join all our owners including the school systems by buying the fastest selling Atari programme ever in Australia Try us you won't be disappointed

Now have a think about the features and compare the prices. It is possible for you to put together a whole system at a far cheaper price than our competitors and you get a full communications package and not just Prestel You can probably now see why Megaterm is a fast selling product

Requirements : Any Atari 8 bit computer with at least 48 K and disk or cassette (please specify).

Dealer, school and bulk order enquiries throughout Europe welcome.

Sunsoft Systems,
150 Bonney Avenue,
Clayfield, QLD 4011
AUSTRALIA

Tel: 15D 617-262-8798
(9am. – 12noon GMT please).

£50

including air mail post

+

international postal order
or bank draft only
please

* PRESTEL is a trade mark of British Telecom PLC.

BRING Twillstar INTO YOUR HOME

Computers

HARDWARE

520ST Pack inc 520ST Keyboard Central Unit SM124 – 12" High Resolution Monochrome Monitor SF354 – 3½" 500K Disk Drive Basic Logo TOS	£695 inc. VAT
SF 354 3½" 500K Disk Drive	£131 00
SF314 3½" 1000K Disk Drive	£174 00
SH317 10 Megabyte Hard Disk Drive	£436 00
S1224 12" Medium Resolution Colour Monitor	£348.00

Printers

NEW

NOW AVAILABLE
Juki 5510 Gives you 180 CPS & NLQ Standards
£286 00 INc VAT

and that's not all! The Juki 5510 also has full graphics mode two position dip-switch (providing instant compatibility with both the Epson and the IBM Graphic Printer) Standard 2K memory (expandable to 14K) built-in Parallel Centronics interface and 8-switch international character sets if you need Colour too the optional Juki 5510 Colour Kit gives you seven colour printing for **£112 00**

KAGA KP810

The 80 column printer with 140 CPS Draft and NLQ with friction and Tractor feed offering 8 INT character sets long life cartridge ribbon and standard centronics interface **£195 00**

Also available KAGA KP810 (wide carriage printer) **£379 00**

COLOUR PRINTERS

Canon PJ1080A	£440 00
Juki 5500	£286 00

EPSON LX80

with 100CPS draft and 16CPS NLQ and optional tractor adaptor and sheet feeder. This printer has a standard parallel connection and accepts all other Epson serial and parallel boards with external dip switches for easy access and internal 1K buffer. It offers a high specification at a low price **£239 00**

ALSO AVAILABLE

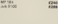
Epson FX 80	£346 00
Epson FX 100F/T	£505 00

CITIZEN 120D

This new citizen 120D with 120 CPS and 25 CPS NLQ comes with tractor and friction feed as standard IBM and Epson compatible with TWO years warranty **£175 40**

Seikosha GP 50A (Parallel)	£99 00
Seikosha GP50S inc Printer I/F + Cables	£89 00
Seikosha 1000A (NLQ)	£199 00
Canon PW 1080A (NLQ)	£285 40
Canon PW 1156A	£379 00
Star SG 10	£249 00
Star SG 15	£385 00
Brother EP 44	£728 00
Shinwa CP 80A	£189 00
MP 165	£240 00
Juki 5100	£289 00

DAISYWHEEL PRINTERS



QUENDATA DWP 1120
with optional tractor/sheet feeder and 13" paper with facility
This Daisywheel printer with 20 CPS has 98 character printwheel compatible with the QUME Standard centronics interface (optional RS232C) **£199 00**

Brother HR 15	£349 00
Juki 6100	£310 00
Juki 2200	£375 00
Juki 6300	£790 00

Accessories

TRACTOR ADAPTERS

FX 80	£33 00
LX 80	£23 00
Juki 6100	£129 00
Juki 6300	£129 00
Quendata DWP 1120	£114 00
Brother HR 15	£95 00

SHEET FEEDER

Juki 6100	£173 00
Juki 6300	£173 00
Quendata DWP 1120	£165 00
Brother HR 15	£312 00
LX 80	£58 00

LEADS

Printer Leads	£12 00

Software

DATABASE	
H & D Base	£99 95
DB Master One	FOC
Hippo Simple	£49 95
BDS/Finder	POA
BDS/Autoclerk	POA
Habawriter	£49 95
PROGRAMMING LANGUAGES	
Modula 2	£99 95
Macro Assembler	£39 95
Devpac ST	£48 95
K Seka	£49 95
Metro Assembler	£49 95
Dragon Forth/Level I	£58 95
Dragon Forth/Level II	£148 95
Dragon Forth/Accel	£74 95
H&D Forth	£39 95
Hippo C	£74 95
GSTC	£59 95
Pro Fortran	£320 00
ENTERTAINMENT	
Forbidden Quest	£34 95
Perry Mason	£39 95
Starcross	£49 95
Zork I	£22 95
Zork II	£40 95
Zork III	£40 95
Suspect	£40 95
Witness	£35 95
Hitchhiker's Guide	£37 95
Sorcerer	£44 95
Encounter	£30 95
Planetfall	£22 95
Cutthroats	£39 95
Infidel	£46 95
Seastalker	£22 95
Wishbringer	£30 95
Suspended	£45 95
Deadline	£22 95
A Mind Forever Voy	£44 00
Lands of Havoc	£19 95
Flipside	£19 95
Mudpies	£19 95
Zkul/West	£34 95
Ultima II	£49 95
Transylvania	£39 95
Hex	£30 95
Hippo Almanac	£34 95
Mission House	£19 95
Fahrenheit 451	£49 95
Treasure Island	£38 95
Spellbreaker	£40 95
Bratacous	£54 95
Crimson Crown	£30 95

ATARI 520ST COMPUTER SYSTEM
16/32 bit Motorola 68000 processor
512K main memory up to 320K ROM
High resolution graphics
360K 3.5 inch floppy disk
High resolution monochrome monitor
14 inch colour monitor option available
GEM mouse-based screen management with icons windows and drop-down menus.
Special Education Price
Call for details

CREDIT FACILITIES
Full credit facilities now available nationwide
- LOW DEPOSITS
- FAST FRIENDLY SERVICE
- UP TO 3 YEARS TO PAY

We have negotiated with a leading Finance Company to provide this additional service for our clients
Call for further details

How to Order

You may order these by post, paying by cheque made payable to TWILLSTAR COMPUTERS LTD

All you have to do is to let your requirements on a sheet of paper and we will despatch your goods within 24 hours subject to availability. Please add the following amounts for Postage and Packing

Items below £10.00	add £1 00
Items below £50.00	add £2 00
Items below £100.00	add £3.50
Items over £100.00	add £8 00

All prices include VAT at 15%
No Hidden Extras
Access/Visa Card Holders
Call us on our new Special Line
61-571 5938

TCL

TELEPHONE ORDERS
(01) 574 5271
Telex Number 25247 attn TI

Twillstar Computers Limited
Apex House, Blandford Road,
Norwood Green, Southall, Middx UB2 4HD

Midi message from the hills of Wales

Anthony Ginn hunts for Midi software for the 520, — and finds there's not a lot of it about

Finding Midi software for the 520 is like looking for an atheist in a monastery. Having been foiled numerous times by as many sources I turned despairingly to a vague contact in the remote Welsh hills by the name of Adrian Wagner.

It turned out to be a scoop. Adrian is developing something that will shake up the electronic music business from top to bottom – he is using the 520ST as the brains of a 16 bit resolution sampling system.

We looked at sampling in last month's *Atari ST User*. A sound is recorded through a microphone and stored digitally in the computer's memory. Depending on the software the sound can then be edited using graphics sent back to an instrument – usually a keyboard – and played back at any pitch.

A range of samplers use popular 8 bit micros. The Rolls Royces of sampling however are the Synclavier and Fairlight costing £55 000 and £35 000. They use 16 bit processors which greatly increase the sound quality. An 8 bit system can only sample 256 levels of dynamic change. A 16 bit processor can sample over 65 000 characteristics of a sound.

Adrian Wagner's system will use the full 16 bit capability of the 520ST to produce a sampler comparable to the Fairlight and Synclavier – and cost less than the present 8 bit packages. According to Adrian the sampling frequency to scanning rate is the same as that of a Philips Compact Disc. This means the quality of sound recording will be superb.

The software will allow the sound to be displayed and edited on the screen. The wave form of the sampled sound will be displayed ready to be edited with the mouse. For example you could record a thunderclap and decide you didn't like the high edge. Altering the wave shape on the screen will alter the sound played. There will be facilities to loop a note to make it longer, delay, reverberate and echo sounds. You will also be able to record a sound and play it backwards.

Adrian complained about the ST's operating system. "It's full of bugs. Some of them make it difficult to talk to the ports. When it finds an error 100 000 toadstools appear on the screen." The operating system was probably written by an old hippy high on magic mushrooms.

My enthusiasm restored I made a final attempt to get in touch with Island Logic which had claimed the previous week it no longer existed. This time I was told it had now been reorganised and was busy preparing music software for the 520ST.

Island's package is due sometime this year. It is based on Island's Music System for the BBC Micro and Commodore 64 but will use the ST's 16 bit muscle to produce a much higher quality sound. Pull down menus and graphics environment will make the software easier to use.

The quality of sound recording will be superb

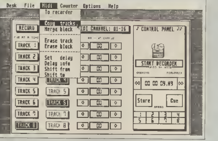
The Music System will feature a keyboard emulator which allows you to use the 520's keyboard as a substitute for a musical keyboard. You play on qwerty instead of Steinway. Notes will appear as you play them on staves on the screen. The system will record your notes in real time whether played on the ST keyboard or a Midi connected instrument.

There are six parts to the program including the keyboard emulator and instrument connector modules. An on-screen editor will display and record notes as they are played. You can then edit the final score using the mouse. Notes will be picked up and dropped on the chosen line. Music will be manipulated and edited in the way text is edited by a word processor program.

One of the Music System's most exciting features will be the synthesiser module. It will display a sound's characteristics graphically and allow the voice to be altered on screen by editing the ADSR graph and wave shape. The system will include a library of pre-defined voices which can be edited in the same way.

Music System will also contain a mixing desk. This will enable tracks to be mixed, linked and edited between different voices. Island's Adrian Boot said there will be the potential to mix an almost infinite number of tracks. The only limitation will be the output system.

The system will connect to a printer. This will



enable musical scores to be dumped onto paper. It will also feature a simple word processor to add and edit lyrics with the score. Music System's modules will communicate with each other. A voice created on the synthesiser can be played on the keyboard emulator or an external Midi instrument, the score recorded and edited on screen, lyrics added, and the final score dumped onto paper.

Music System sounds like it will be a comprehensive low priced package, ideal for the beginner. As soon as it's available we'll do a proper review. Apparently Activision is releasing a similar package for the ST in America called Music Studio, so Island had better get their Midis out before the competition arrives.

Soon after these discoveries the Editor told me he had just got a 520 Midi music package from Holland. The Dutch disc is a Midi recorder package. It arrived on Friday, but I had to get married, it needs a megabyte of memory, my car broke down, Casio still haven't sent me C101 Midi synth, I ran out of time, I had a headache and we had a power cut, so I haven't been able to play around with it yet.

You play on querty instead of Steinway

The preliminary documentation indicates that it works like a conventional multi-track recorder with extra options. There are five pull down menus. One is entitled Midi and contains the options – to recorder, copy tracks, merge block, erase track, erase block, set delay, delay info, shift from and shift to.

To recorder puts the ST into the recording mode. A new menu, recorder, lets you decide which tracks to record on. Clicking the right mouse button will start recording. Undo stops recording and the recorded track will appear under the header Play.

It wasn't clear from the documentation whether the program will record 8 or 16 tracks. The block of tracks (master tape) can be rewound or moved on by holding the mouse button down when the pointer is over the rewind or fast forward icon. Eight tracks are displayed simultaneously on the screen. Each has fast forward and rewind icons, and a digital counter to show where you are on the tape. The software turns the 520 into a digital recorder. Portraying the functions in tape recorder language makes it easy to understand digital recording and mixing. The package seems exciting and will be reviewed as soon as possible.

It looks like two types of music software will appear over the next few months. Packages like Island's Music System and Activision's Music Studio will be for the home user interested in making music. They will be inexpensive and do a bit of everything – recording, graphic editing of voices and scores, keyboard emulation and simple mixing.

More specialised systems, like the Dutch recorder and Welsh sampler, will appear for professional musicians. They will use the full power of the micro to perform a specialised job. Many professional musicians and sound engineers will use the 520 as a dedicated digital music system. *Atari ST User* will keep you up to date with developments.

ST solutions from Kuma!

K SPREAD
Spreadsheet

£49.95
inc VAT

An easy-to-use Spreadsheet enjoying the benefits of the user friendly GEM system with its mouse driven icon selection and multi-window presentation

- Up to 5 display windows
- Data entry and Edit window with full function Editor
- Column widths easily adjusted
- Column/row insert/delete controlled
- Delete cell or group of cells
- Copy cell or group of cells
- Clipboard for moving cell or group of cells
- Multiple Drop Menus 1 File operation 2 Options setting 3 Easy Printer Control 4 Global- Enable disable delete or overwrite verification

This professional package combines full use of the ST's large RAM capacity with its fast processing speed and facilitates easy data transfer with the K COMM communications package and the forthcoming database and word-processing packages

K SEKA
Assembler

£49.95
inc VAT

(Sixty-eight K Assembler) – The fast and easy-to-use assembly system for the generation and analysis of 68000 code programs, combining full use of the ST's large RAM capacity with an impressive list of useful features

- Editor – Ascii compatible line editor
- 68000 Macro Assembler – Up to 9 parameter, no nesting 3000 lines/minute, absolute or relocatable code
- Linker – Combines and relocates object files
- Disassembler
- Machine Monitor/Debugger – Includes Single step breakpoints memory inspect and modify
- Operating system – Tos
- Long labels – In excess of 8 characters
- Size of SEKA – 17 kbytes
- Screen/Printer – Fully supported in all modes
- Conditional Assembly operators supported

K RAM
RAM Disc

£29.95
inc VAT

Enables one or more RAM discs to be set up as high speed "floppy discs" The spectacular improvements in the speed of file handling are immediate! – files are accessed and written to between 40 and 50 times faster

Kuma Computers Ltd

12, Horseshoe Park Pangbourne, Berks RG8 7JW
07357-4335 Telex 846741 KUMA G Telecom Gold 81 KUM001

Available now from **LASKYS** *and leading ST-Dealers*

K COMM
Communications

£49.95
inc VAT

This superb package turns the ST into an easy-to-use and configure terminal Operating under the GEM environment, all the normal parameters can be changed very easily and subsequently saved permanently Its impressive features include

- Terminal Configuring
- Options for Printer control
- Screen dump
- Input buffer dump and 'Break' transmission
- File handling
- Text file transfer capture
- Xmodem file transfer with error checking
- On line access to disc directory
- 'Teletype' VT 52 and VT 100 emulation
- Baud rates from 75 to 9600 baud
- Odd even or no parity, 7 or 8 bit with 1 or 2 stop bits
- Handshakes can be used on the Xon/Xoff, cts/rts or none
- Screen widths of 80 64 or 40 characters
- Full duplex or half duplex operation
- "DEBUG" mode
- User defined function keys and keyboard layout
- On screen HELP pages

The ATARI ST Explored
by John Braga

£ 8.95 no VAT

The comprehensive guide to the Atari ST gives potential purchasers of the ST an invaluable guide to the capabilities of the ST and will give owners guidance to enable them to get the most from this remarkable system

Topics covered include GEM TOS the BIOS ST Basic and LOGO with an in-depth coverage of 68000 assembly code giving useful information Including details on system variables and operating system calls to the BIOS There are also sections on how to configure the keyboard and utilise the Serial interface to connect the ST to printers electronic mail services and other computers

The text is liberally illustrated with diagrams and examples, making it easy to follow and understand this book is essential to anyone using, or considering using an Atari ST

K GRAPH
Business Graphics

COMING SOON ..

GEM is the registered trademark of Digital Research

Kuma Computers Ltd Unit 12 Horseshoe Park
Horseshoe Road Pangbourne Berks RG8 7JW

Please send further details of the Kuma ST range

Name

Address

Phone

Trade enquiries welcome